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ABSTRACT

Designed for use by directors of senior citizen groups, continuing education directors, and driver education instructors, this manual suggests a course outline, subject content, and instructional materials for effectively teaching a refresher driving course. The first seven topics represent the basic content and none should be omitted: orientation to the course: self-assessment (testing) of participants: attitudes affecting the operation of a motor vehicle; compensating for limitations imposed by advancing age; defensive driving and handling emergency situations; motor vehicle regulations. The other four topics--acquiring a motor vehicle and insurance, useful mechanical knowledge, natural laws affecting motor vehicle operation, cooperation with organizations concerned with highway safety--should be offered only if the participants are sufficiently interested. The total number of meetings should remain flexible enough to accommodate any or all of these supplementary topics. (The document includes sample publicity items, sources for specific films and other instructional materials, a bibliography for instructors, and eight profile tests with answers.) (LY)

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DRIVING COMPETENCIES FOR THE ELDERLY

A Guide for

- Directors of Senior Citizens Groups
- Directors of Continuing Education
- Instructors of Driver Education

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Bureau of Continuing Education Curriculum Development
Albany, New York 12224
1970

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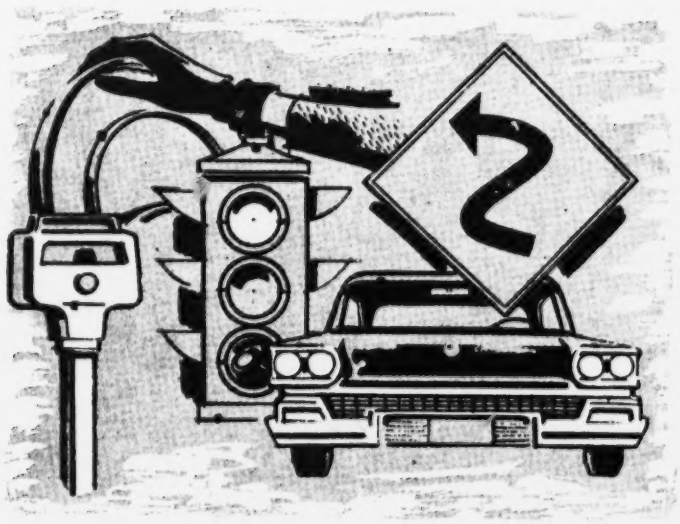
DRIVING COMPETENCIES FOR THE ELDERLY



THE UNIVERSITY OF THE STATE OF NEW YORK
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FOREWORD

This course in driver improvement for senior citizens is representative of the efforts of continuing education to assist as many community members as possible in the never-ending task of adapting to the demands of modern living. Senior citizens may not realize, may not know how to cope with, or may not even be willing to acknowledge the drastic changes that have occurred in the network of highways they drive, the motor vehicle regulations they are to abide by, or the limitations that advancing age may have imposed upon their driving competencies. Therefore, the purpose of this manual is to provide guidelines for a course designed to update the knowledge and skills required of all senior citizens who still operate a motor vehicle.

In developing this manual, a number of sources were consulted for background information and for material that could be adapted to furthering the specific intent of the program. *An Investigation of the Problems and Opinions of Aged Drivers*, compiled by the National Safety Council provided guidance regarding the specific needs of older drivers and suggestions as to how these needs might be met. Information relative to efforts in other parts of the nation to improve the driving of senior citizens was obtained largely from several articles which appeared in the journal *Traffic Digest and Review*.

Ideas, outlines, and materials for the various topics included were drawn from the following sources: *Driver's Manual* published by the New York State Department of Motor Vehicles; *Driver and Traffic Safety Education* by the Automotive Safety Foundation; *Driver and Traffic Safety Education* by the Bureau of Secondary Curriculum Development, State Education Department; *Owner's Manual* by the Buick Motor Division of General Motors Corporation; and the *Traffic and Safety Manual* by the American Automobile Association. The test on traffic and driving knowledge is adapted from *You and Your Driving* distributed by the Humble Oil and Refining Company.

Warren C. Shaver, Chief, Bureau of Special Continuing Education and the Associates of his staff, Boyd Campbell and Henrietta Rabe, reviewed the materials and made valuable suggestions, which, when incorporated, made the course more pertinent to the driving habits and learning styles of the senior citizen. Louis Frani, Supervisor, and Donn Maryott, Associate, Safety Education, were consulted in the development of the technical aspects of the topics included. George K. Tregaskis, Associate, Bureau of Continuing Education Curriculum Development, contributed much of the original writing, designed the format, and prepared the total manuscript for publication.

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MESSAGE TO THE COURSE COORDINATOR

The purpose of this course is to enable the senior citizen to continue as a motor vehicle operator as long as possible while maintaining as high a level of driving efficiency and pleasure as possible. This manual is designed to further that purpose by offering the coordinator suggestions regarding course outline, content, resources, and modifications in instructional techniques necessary to effectively teach general principles of driving that should be included in any refresher driver course. In addition, this manual emphasizes specific principles pertinent to the senior citizen who continues to exercise his driving privileges.

Most motor vehicle operators assume that their knowledge and skills are adequate for the task of driving on today's highways. Suggesting that these competencies may need updating requires the utmost tact and diplomacy on the part of the Director of Continuing Education, the course coordinator, and consultants and other personnel involved in the program. It is imperative for the senior citizen to be assured that his participation in the course will in no way jeopardize his driving privileges. The fact needs to be stressed that this is strictly a driver improvement course and that any testing which a participant chooses to take advantage of will be used solely for the purpose of assisting the coordinator in meeting individual needs.

Topics one to seven represent the basic content of this course and none should be omitted. Topics eight to eleven represent subjects that should be explored only if the participants' interest seems to warrant their inclusion.

The total number of meetings should remain flexible enough to accommodate any or all of these supplementary topics.

WARREN C. SHAVER, *Chief*
Special Continuing Education

MONROE C. NEFF, *Director*
Division of Continuing Education

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INTRODUCTION

There are a number of reasons why a refresher driving course for senior citizens is warranted. They include the following:

1. Senior citizens have a tendency to resist change. Driving habits gained a half century ago, when roads were narrow and vehicles few and far between, are not suitable for today's high speed roads and high pressure situations. Some older people fail to alter their behavior to fit new circumstances. For instance, according to the American Automobile Association,a leading contributory cause of accidents involving this group is failure to yield the right-of-way. In addition, many older drivers may tend to ignore modern procedures of maintaining a smooth and safe flow of traffic.

2. Functional age is not always the same as chronological age. Many experts point out the fact that age alone does not determine the ability of an older person. The concept of functional age -- i.e., the physical and psychological aspects of the individual -- should be included in the criteria. Some people are young at 70; others may begin evidencing the limitations of advancing age at 50.

3. As a means of conserving energy, senior citizens may have a tendency to focus on small details rather than maintaining an awareness of the total driving picture. In terms of driving, this could be disastrous.

4. Elderly people take a longer time to plan an action as well as to perform it. Considering that the planning function takes about twice the length of time as performance and that the time taken to plan increases with age, the driving ability which requires a continual series of actions is definitely affected.

5. Older people have much difficulty in changing habitual procedures. This, combined with the difficulty of making decisions under pressure, has an effect in traffic.

6. The senior citizen's susceptibility to heart attacks and strokes can cause a minor accident to become a fatality. Impairment of hearing, vision, perception,and reflexes adds to the problem.

Promotion for the course should begin with existing senior citizen clubs or centers. The Director of Continuing Education is encouraged to contact directors of these agencies and propose that the course be offered at a center for senior citizens during a time when they normally gather at the facility for other activities. Holding the course at a center for senior citizens would reinforce the idea that this is a special course designed for a select population.

The Director of Continuing Education might be instrumental in publicizing the course by issuing news releases to the local media, distributing posters to public places frequented by senior citizens and to church and civic groups having senior citizens as members, or by mailing descriptive flyers directly to senior citizens of the community. In addition, future enrollment for this course might be promoted by issuing bumper stickers, rear window decals, and lapel pins to senior citizens completing the course. Sample publicity items may be found in the Appendix.

In determining who should enroll in the course, the Directors of Continuing Education will have to bear in mind that the intent of this course is driver improvement for senior citizens currently operating motor vehicles and that senior citizens not holding valid operator's permits or not having driven in a number of years should probably be encouraged to enroll in a more basic driver education program. Ideally, this course should be offered as a community service with no fee involved. A cost, however modest, may tend to limit enrollment.

In establishing the length of the instructional sessions, consideration should be given to keeping the lecture time short. The senior citizens will welcome frequently interspersed social breaks. A classroom should be chosen that would ensure ease of access, proper heat, ventilation, protection from drafts, comfortable seating arrangements, above average illumination, and freedom from distracting noises.

The Director of Continuing Education should also assume the responsibility of arranging for the use of a dual controlled driver education vehicle.

ORIENTATION TO THE COURSE

At the beginning of the first session introductions should be made by the course coordinator. These should be handled in a manner that establishes an informal, relaxed atmosphere. The participants should be congratulated for having shown a desire to improve their driving abilities and perhaps a keynote speaker from the Bureau of Motor Vehicles or local police department could make a brief presentation that would help the senior citizens to realize that such a course has broad community support. At this time, the instructor should also establish with the participants the time, place, and topics of future meetings. Care should be taken to allay any apprehensions regarding the personal assessment sessions. A survey of the group's concerns could then be elicited by means of a questionnaire similiar to the one that follows. The participants would be asked to complete this questionnaire and submit it anonymously. The results, when collected and tabulated, might then be presented to the group. Many will be surprised at the concerns they share in common.

SAMPLE QUESTIONNAIRE

1. *How many years have you been driving?* _____
2. *How many miles do you drive in a year?* _____
3. *Do you usually drive alone?* _____
4. *When passengers ride with you, would you prefer that they: not smoke* _____, *not engage you in conversation* _____, *alert you to possible dangers* _____?
5. *Are there any motor vehicle regulations you think are too lenient?* ___ *What are they?* _____
6. *Could you recommend any new motor vehicle regulations?* _____ *Please describe.* _____
7. *Would you say that young people generally drive safely and politely?* _____
8. *Do you feel that the modern highways are quite dangerous?* _____
9. *What kind of accident do you most often have to take evasive action to avoid?* _____
10. *Do you always wear safety belts when driving?* _____
11. *Do you find it frustrating to maintain a car?* _____
12. *Are you a member of an automotive service club such as AAA?* _____
13. *What kind of mechanical problems do you most frequently encounter?* _____
14. *Are you familiar with the concept of defensive driving?* _____
15. *Do you have any power options or other assessories on your car that make your driving safer and more comfortable?* _____ *Please list* _____
16. *What is the most difficult maneuver for you to perform while driving?* _____
17. *Please list any contribution you feel you might be able to offer regarding the topics which will be covered in this course.*

TOPIC TWO

SELF-ASSESSMENT

The coordinator needs to exercise the *utmost* tact in approaching this session. It needs to be emphasized that the *results of the tests will in no way affect the senior citizens' driving privileges.* Rather, the sole purpose of the testing is that the senior citizen might better evaluate his own driving competencies and then, with the guidance of the coordinator, plan measures to compensate for any limitations.

If some senior drivers appear anxious about being tested, then an alternate activity should be provided for them during this session.

- Psycho-physical testing of participants for:
  - visual acuity
  - color discrimination ability
  - depth perception
  - field of vision
  - night vision in low light
  - glare vision
  - recovery after glare
  - reaction time
  - hearing loss
  - physical strength

  The course coordinator may wish to secure the assistance of a school nurse teacher, a representative of the Department of Motor Vehicles, or a physician for this phase of the program.

- Paper and pencil testing of participants for knowledge of motor vehicle regulations (See Appendix for test.)

- Road testing of participants for operation of motor vehicle (This may have to be arranged with individuals for times outside of the class session when a dual controlled driver education vehicle is available.)

ATTITUDES THAT INFLUENCE THE OPERATION OF A MOTOR VEHICLE

- General concepts to be reviewed:

  - Predictions related to other highway users are more subjective and unpredictable than those related to physical elements in the environment. You do not know what the other driver will do but you should consider what he *might* do.

  - We know very little about the physical, mental, and emotional state of highway users with whom we interact. Although efforts are being made to identify and "ground" the unfit until their impairing condition has been corrected or properly controlled, there are operators on today's highways afflicted by serious physical and mental disorders.

  - Expecting and being prepared for the unexpected or the worst behavior on the part of others usually will afford you the time and space to take evasive action. It is better to assume the worst and not have it happen than to ignore the worst and have it occur.

  - Deviant action by other operators does not necessarily imply anti-social motivation; they simply may have misperceived the situation. Surveys show that most persons driving with their headlights on high beam at inappropriate times are doing so *unintentionally*.

  - The validity of predictions and expectations increases in relation to the accuracy and adequacy of communications occurring between highway users through such means as directional signals, brake and back-up lights, position of vehicle, horn, speed changes, body lean of vehicle, and eye-to-eye contact.

  - In addition to the usual cues related to the other operators' intentions, sometimes the age, number of people, and actions of the drivers or passengers in the other vehicle will reveal some valuable tips as to what might be expected.

  - Quality of predictions can be increased if the operator considers not only how the situations appear to him, but also takes into consideration how the situations appear to others using the highway and what his behavior means to them.

  - In predicting the actions of other highway users, the operator is aided by a set of rules and norms which serve to coordinate the interaction of highway users by limiting speed and path alternatives (lane markings, signs and signals, right-of-way laws, and standard speed controls).

- While a prudent operator will be guided by expectations concerning the behavior of other highway users, he *avoids full commitment* to assumptions about what they will do. He is prepared to adjust in case his prediction is not borne out.

- Specific concepts to be introduced regarding older drivers:

  - Society is generally solicitous of the welfare of senior citizens; however, there may be a tendency on the part of youth to become impatient with older drivers when it means sharing the road with them.

  - Senior citizens should drive at a moderate speed and realize that an overcautious pace which impedes the normal flow of traffic may, on modern highways, may be as dangerous as speeding. When the senior citizen feels that maintaining this moderate pace requires him to drive beyond his abilities, he should consider terminating his driving career.

  - A senior citizen should not become upset by a discourteous word on the part of another driver. The years of driving experience and mature judgment of the senior citizen should enable him to maintain exemplary driving habits even when they are challenged.

  - It should be emphasized that many motor vehicle accidents as well as many impolite maneuvers committed on the highways are caused by the operator attempting to save time. In this respect, the senior citizen, who leads a less hurried life, may be able to prevent an accident by his willingness to take time to be polite even when the other operator is obviously wrong.

  - There are factors of advancing age that contribute to making the senior driver a safe motor vehicle operator. They are:

    driving experience

    more leisurely pace of life

    safety consciousness

    increased understanding of human nature and his ability to cope with its shortcomings

  - There are factors of advancing age that may contribute to making the senior driver a greater risk on the modern highway. They are:

    decreased visual and hearing acuity

    slower reflexes

    physical handicaps such as arthritic hands, stiff neck, etc.

    increased use of medications which may have debilitating effects

increased chance of illness while driving

lack of stamina for coping with emergencies

The older driver needs to realize his limitations, compensate for them when possible, and when they can't be compensated for, consider the wisdom of continuing to operate a motor vehicle.

Many changes have occurred in transportation.

TOPIC FOUR

COMPENSATING FOR LIMITATIONS IMPOSED BY ADVANCING AGE

- Correct any visual deficiencies. If this requires a visit to an eye doctor, inform him that glasses are needed for driving. If sunglasses are worn, consider prescription lens rather than snap-ons.

- If color discrimination is a problem, then the driver needs to interpret traffic lights according to whether the top, middle, or bottom light is illuminated. A reminder taped on the dashboard may be of assistance when congested traffic tends to confuse the memory. If traveling out of state, he must be aware that the arrangements of traffic lights may vary. The most frequent variation is a horizontal rather than a vertical arrangement of lights.

- Problems of depth perception may be compensated for by increasing the buffer zone between self and other obstacles. Telephone poles and highway markers can be used to judge adequate distances. Extra caution should be exercised in overtaking other vehicles. Avoid congested places and times in traffic patterns where and when distance judgment is quite critical.

- A restricted field of vision may be compensated for by:
  - raising the seating position
  - installing oversize rearview mirrors
  - installing rear window defroster
  - asking passenger in front seat to check traffic on his side
  - developing the habit of making swift movements of the head to left and right

- Poor night vision in low light can be compensated for by:
  - installing day-night rearview mirror
  - installing cornering lights
  - refraining from purchasing motor vehicles with windshield completely tinted
  - looking at right side of road when oncoming car fails to dim headlights
  - reducing the intensity of instrument panel lights

- Decreased reaction time may be compensated by:
  - increasing the buffer zone
  - decreasing speed
  - covering the brake with the right foot when approaching intersections and other doubtful situations
- Hearing losses may be compensated for by:
  - refraining from playing car radio
  - leaving a window on either side of the car open
  - refraining from engaging in conversation
  - using a hearing aid
  - requesting another passenger with good hearing to report pertinent traffic sounds
  - frequently checking rearview mirror to detect approaching emergency vehicles
  - requesting a competent auto mechanic to test drive your car for the purpose of detecting any sounds which may be symptomatic of mechanical deficiencies
- Compensating for loss of physical strength by:
  - purchasing a smaller size car for easier parallel parking
  - purchasing power equipment
  - making shorter trips or taking frequent rest stops
  - avoiding parallel parking
  - taking advantage of the emergency road service available from automotive associations
  - using the "walking-the-wheel" rather than hand-over-hand method of steering
  - insuring that all manually operated levers, handles, and buttons operate easily
  - using a spray-on fluid in conjunction with ice scraper to clean windows of accumulated ice
  - wearing driving gloves or using leather wheel cover to increase grip on steering wheel

- wearing comfortable shoes with non-slip soles
- installing convenient ring for blowing horn

- Compensating for debilitating effects of drugs

  There is actually little compensating that can be done regarding the debilitating effects of drugs. Reading drug labels carefully and consulting with the pharmacist and prescribing physician regarding the effects of drugs that may lead to impaired ability to operate a motor vehicle will apprise the user of certain cautions that need to be exercised. If one is constantly using drugs that may produce drowsiness, lethargy, fuzzy vision, or nervousness, then it is the social responsibility of that person to refrain from operating a motor vehicle. However, if the use of such a drug is only periodic, or if the effects of the drug are felt only at certain times following ingestion, then the individual who feels that he must drive would be prudent to plan to do his driving when the effects of the drug are minimum. It should be mentioned that it is not only prescribed medications that might impair driving efficiency but also many of the over-the-counter medications, such as the common cold capsules containing antihistamines, are also capable of inducing drowsiness or lethargy.

  Some of the commonly used drugs are dangerous for drivers.

  - *Antihistamines* are commonly used in the treatment of allergies and the common cold. The sedation they produce can cause inattention, drowsiness, and confusion in a driver.
  - *Amphetamines* are the so-called pep pills used by some drivers to stay awake on long runs.
  - *Barbiturates* are sleeping pills. Their danger lies in the fact that their effect may linger and leave a driver drowsy and sluggish.
  - *Tranquilizers* induce calmness, but they can have side effects that can produce inattention, drowsiness, or confusion.
  - *Narcotics* release inhibitions and may make a driver more daring and willing to take chances.

- Compensating for the sudden onset of illness

  - If the older driver should become ill while driving, the most expedient measure is to bring the vehicle to a safe stop. If possible, the vehicle should be parked off to the side of the road and the warning flashers activated. However, if the driver feels that the illness is imminent, he should not continue to drive in an attempt to find a parking spot. This could result in a more dangerous situation than stopping immediately - even if in the line of traffic. Keeping the foot on the brake and blowing the horn may alert other drivers to the senior citizen's emergency.

A card kept taped to the dashboard containing the following information will be a help to those who come to assist.

Name

Name, address, and telephone number of person to be notified in emergency

Name, address, and telephone number of physician to be called

Preferred hospital

Special notes regarding existing medical conditions, drugs, etc.

The senior citizen may wish to tape a dime or two to this card for emergency telephoning.

Operating a motor vehicle has always required skill and knowledge.

TOPIC FIVE

DEFENSIVE DRIVING AND HANDLING EMERGENCY SITUATIONS

To protect himself, a driver must learn to drive defensively by anticipating the errors of others and preparing to compensate for them. In addition, a driver must always behave in a correct and sensible fashion so that he does not confuse other drivers.

Defensive driving rules are simple and easy to follow. By doing so, the driver should be able to avoid getting himself into difficult situations. The rules are:

Stay alert so that you can keep track of what is going on around you at all times.

Look for trouble spots developing -- ahead of you, to the sides of the road, and behind you.

Expect the other driver to do the wrong thing and have a plan of action prepared to counter his error.

The defensive driver is a competent and confident driver because he knows that he can avoid danger by anticipating and taking prompt remedial action. Further, he can drive with confidence because he behaves in a correct and sensible fashion to avoid other drivers. If every driver always obeyed the rules, and always behaved in a sensible fashion, driving would be simpler and safer. Unfortunately, this ideal situation does not exist. Instead we frequently encounter drivers who behave unpredictably or recklessly, and other highway users, such as pedestrians and bicyclists, who ignore the rules that apply to them.

- Defensive driving on limited access highways

  Expressway driving differs from ordinary driving because you must think faster and handle your vehicle more effectively at higher legal speeds. Expressway drivers must be confident and skillful -- but not reckless -- and must know and understand the special expressway driving rules explained in this section. Timid drivers and drivers with only limited experience should not use high-speed expressways.

  - *Before You Use an Expressway:* Plan your trip in advance so that you know your entrances, directions, and exits. Make sure that you and your car are in good condition.

  - *Entering an Expressway:* Obey the indicated speed limit on the approach.

If there is an acceleration lane at the entrance, turn on your signal and accelerate to cruising speed before blending in with the traffic. If you must wait for a gap in the traffic, slow down at the beginning of the acceleration lane so that you will have enough space to speed up before moving onto the expressway.

If there is no acceleration lane at the entrance, or if the lane is short, wait at the entrance until there is a gap large enough for you to reach cruising speed without interfering with oncoming cars. Then signal your entrance and accelerate as rapidly as you can to blend in with the traffic flow. Once on the expressway, make sure your signals are off.

- *Operating on the Expressway:* Move at a steady pace with the flow of traffic and obey the posted speed limits.

Don't tailgate. Stay far enough back from the car ahead so that you can stop safely if he stops quickly. Generally, you should stay back at least one car length for every ten miles per hour of speed. For example, if you are traveling at 60 miles per hour, stay back at least six car lengths (120 feet). Stay even farther back when the pavement is slippery with rain, ice, or snow.

Signal all lane changes, and, when you have completed a lane change, make sure that your directional signals are off. Do not weave in and out of traffic lanes. Before passing a car ahead of you, make sure that the passing lane is clear. Use your rearview mirror and turn your head to make sure that there is no car in the blind spot near your left rear wheel. Signal your lane change and move into the passing lane well behind the car you're overtaking. Accelerate and pass quickly. Once past, wait until you can see in your rearview mirror at least a car length of space in front of the car you have passed before signalling your return and moving back into the driving lane. When the action is completed, make sure that your turn signal has gone off.

- *Leaving the Expressway:* Move into the proper traffic lane for your exit well in advance of the exit ramp. Start signalling your intention to leave the expressway well in advance of the exit.

If there is a deceleration lane, maintain your cruising speed until you move onto this lane and then decelerate to the exit speed.

If there is no deceleration lane, start to slow down before you reach the exit and then, once off the expressway, brake down to the exit speed.

If you miss your exit, go on the next one. Never stop on an expressway pavement or try to back up to a missed exit. If you do, you take the tremendous risk of being struck by an oncoming car.

Once you are back on ordinary streets and highways, check your speedometer continually until you become used to the slower speeds required.

- *Expressway Driving Tips:*

  On long trips, stop at regular intervals to prevent drowsiness.

  Keep a window open so that there is always fresh air in your car to help keep you alert and awake.

  On bright days, wear good sunglasses to prevent eye fatigue.

  Never wear sunglasses at night because they interfere with your ability to see in reduced light.

- *Vehicle Breakdown:* In the event of a breakdown, drive the vehicle completely off the pavement, with all four wheels on the shoulder. A car with a flat tire can be driven slowly to remove it from a bridge or underpass. Turn on your emergency warning lights. If you do not have warning lights, turn on your parking lights. At night, use flares and reflectors. If you can't get your car off the pavement, remove all occupants and get them away from the car so that they won't be hurt if the car is hit. If you need help and you have a set of color-coded ballons, use one to tell passing motorists the nature of your problem. The color code is: *Red,* Medical Aid; *Green,* Police Aid; and *Blue,* Mechanical Aid.

  If you do not have color-coded ballons, fasten an appropriately colored cloth or a white cloth to your antenna or door handle.

- Defensive driving in congested traffic

  - Develop the habit of getting the big picture so you get the complete view of the overall traffic pattern you are about to encounter. You should get this information early and thus make the right decision.

  - Know the importance of leaving yourself a way out so that you will not let yourself get trapped in a dangerous situation. The importance of making sure others see you -- so you know that they are aware of your presence and are not as likely to dart out in front of your car -- cannot be overemphasized.

  - Plan your trip in advance and avoid congested intersections that will expose you to more traffic problems. It may be better to go around the block when coming out of a driveway than to try to make a left turn through two-way traffic.

  - Older drivers are often frightened by emergency vehicles but they should learn to yield to these vehicles as a normal driving technique.

- Defensive driving in rural areas

  - Older drivers sometimes forget that the local residents of an area have a tendency to drive in or near the center of the road where it is smoother so that they won't run off the road.

- Drivers should be prepared to yield the right-of-way until the other driver's intentions are apparent.

  The "slow poke" driver can cause as many accidents as the "speeder." If he cannot increase his speed to that of the other vehicles, he can pull off the roadway when possible to allow "bunched up" traffic behind him to go around.

- When approaching a country bridge, slow down. If the bridge seems narrow, allow an approaching vehicle to come across before entering. Drive in the country at a time when traffic is at its minimum.

- Keep a safe following distance of at least one car length for every 10 miles per hour. If a vehicle passes you and pulls into your buffer zone drop back to maintain the safe following distance.

- Develop the habit of good sportsmanship when using headlight beams, but don't expect others to be equally courteous. You may warn the other driver that he has his high beams on by flashing yours on and off.

- Move your eyes alternately between the line marking on the left and on the right (center-line and road-edge marking respectively) to keep your vehicle centered in your lane. Avoid staring at the on-coming lights to avoid being blinded.

- Form mental pictures of what is ahead of you in your lane and in right shoulder area (pedestrians, vehicles, etc.) so that, as cars pass and eyes refocus, you can drive momentarily from "memory."

- Defensive driving in the shopping plaza

  - Pedestrians stepping into the course of travel are a constant hazard. Therefore, a driver should exercise extreme caution and even cover the brake with the left foot when approaching an intersection.

  - Stay within the lanes of traffic designated by the painted lines. Be aware of the fact that not everyone does, and collision courses may materialize easily.

  - By glancing into the rear window of parked cars that you are passing, you may be able to spot occupants who are preparing an exit. In this way, you can avoid striking a door which swings open into the course of traffic.

- Handling driving emergencies

  - *Blowouts:* A blowout is a sudden tire collapse which can throw the vehicle out of control. To regain control, hold the steering wheel tightly, steer straight ahead, and ease up on the accelerator. Do not brake until the vehicle is under control.

You may receive warning of an impending blowout by a thumping sound caused by a bulge in the tire. Or, if the tire is losing air rapidly, it will pull the car sideways. Underinflation is one of the most common reasons for blowouts. An underinflated tire loses its shape, and the excessive flexing of the loose rubber creates a rapid heat expansion of the air. Underinflation also breaks and weakens the tire structure. To prevent tire breakdown, check air pressure frequently. When traveling with heavy loads, or for long distances at high speeds, increase the air pressure in all tires by four pounds to help the tires keep their designed shape. Check the pressure when the tires are cool.

- *Loss of a Wheel:* This is a situation that is similar to a blowout. Often the warning signs are the same -- a thumping noise and/or a pulling to one side. The same basic rules apply for recovery of control: hold tightly to the steering wheel, steer straight ahead, ease up on the accelerator, and do not brake until the vehicle has slowed down and is completely under control.

- *Steering Failure:* If you suddenly lose control of your steering and the wheel no longer responds to your turning movements, ease up on the accelerator, but do not brake. Your car may have enough natural balance to keep it moving forward as you slow it down.

  If you brake, or try to shift gears, this sudden change in speed may throw the vehicle off balance and out of control. As the car slows down, you may be able to brake *very gently* to bring it to a stop.

- *Brake Failure:* If your brake pedal suddenly sinks all the way to the floor, try pumping the pedal to build up the pressure. You will generally receive advance warning that your brakes are starting to fail when the pedal feels spongy, and slowly continues to sink while being depressed.

  If pumping the pedal does not build up the pressure, use your emergency or parking brake, but apply gently so that you do not lock the brakes and throw your car into a skid. If you can shift to a lower gear, the engine will slow you down. You can turn off the engine -- leaving the car in gear -- and the engine will slow you down. However, if you have power steering, you may lose this assistance when you turn off the engine.

- *Running Off the Pavement:* If your wheels drift onto the shoulder of the road, don't try to swerve back onto the pavement bacause you might throw your car off balance. Instead, stay on the shoulder and ease up on the gas. After you've slowed down, turn the car gently back onto the pavement.

- *Car Approaching in Your Lane:* If you see a car coming toward you in your lane, pull to the right and slow down. Honk your horn. At night, flash your lights. You may wake the drowsy or inattentive driver approaching you. Do not turn into his lane because he might wake up and swing back into the path of your car.

- *Stalling on Railroad Tracks:* If your car stalls on railroad tracks and you have a manual transmission, you may be able to move it off the tracks by running the starter while the car is in low or second gear. If you have an automatic transmission, you will have to push it off the tracks. If you cannot get the car off the tracks, and a train is approaching, abandon the vehicle, and quickly walk alongside the tracks *in the direction* of the approaching train so that you will not be struck by flying debris.

- *Immersion:* If your car plunges into deep water, but does not sink immediately, escape through a window. Opening a door, even if possible, permits the water to enter the car more rapidly. If the car sinks beneath the surface before you can escape, the weight of the engine will force the front end down first. This usually creates an air pocket in the back of the car. Get into this area and inhale deeply. When the car has settled, you should be able to escape through a window.

- *Fire:* If steam begins to come from under the hood, the cooling system is boiling. Pull to the side of the road and turn off the engine. Avoid overheating in slow-moving traffic by shifting into neutral and racing the engine briefly during stops. This will speed up the fan and the circulating water pump.

  If smoke comes from under the hood, get off the road and turn off the ignition. If no chemical fire extinguisher is available, use dirt or sand to smother the fire. Do not use water, as burning gasoline will float on it and spread the blaze.

- *Headlight Failure:* If headlights suddenly fail, try parking lights and directional signals -- one of the two may work and give enough light to guide you as you leave the road. If your lights fail on a busy or lighted highway, you will probably have enough light from other sources to guide you off the road. If all the lights fail on a dark, deserted highway, slow down and try to keep your car on the pavement until you have reduced speed enough so that you can move onto the shoulder without striking an obstruction.

- *Windshield Wiper Failure:* If the wipers suddenly fail in blinding rain or snow, slow down, roll down your side window, and put your head out so that you can see ahead. Then move your car off the highway. Use the same procedure if your hood should suddenly pop up and cut off your vision.

- *Stuck Accelerator Pedal:* If the accelerator pedal sticks, you may be able to free it by hooking your toe under the pedal and attempting to raise it. If not, turn off the engine and slow the vehicle down. However, if you have power steering or power brakes, you may lose this assistance when you cut the engine.

- Using occupant restraint belts

Most senior citizens began driving before motor vehicles were equipped with restraint belts. As such, they may never have been introduced to their utility or the proper manner of fitting them. This section, therefore, might warrant special emphasis.

  - Various agencies concerned with highway safety have produced films documenting the advantages of wearing restraint belts. After showing one of these films, the instructor may wish to initiate a discussion of the subject. He should, however, be aware that some individuals are quite adverse to wearing safety belts and will cite instances when wearing the belts caused a fatality. In this case, the instructor should avoid engaging such a dissenter in argument. Rather, he should simply review the facts presented in the film and realize that the decision to wear restraint belts is personal.

A senior citizen may have occasion to transport a grandchild or other infant. Therefore a review of the following safety precautions would probably be well received.

  - Discuss such recommended devices as infant safety carriers, child safety seats, or special children's harnesses. If, however, a child is traveling in a vehicle not equipped with these safety devices, the following precautions should be taken:

    Place children in the rear seat. Never allow a child to stand or kneel on any seat.

    Restrain infants unable to sit up by themselves by placing them in a covered, padded bassinet which is placed crossways in the vehicle (widthwise) on the rear seat. The bassinet should be securely restrained with the regular vehicle seat belts. An alternate method is to position the bassinet so that it rests against the back of the front seat, again crossways in the vehicle.

    When a child is old enough to sit up by himself in a car, he should sit on a firm cushion that will raise him high enough to look out of the car window. He should use a conventional lap belt to restrain him at the hips.

    Do not use shoulder belts on children who are less than 4 feet 7 inches in height.

    It is recommended that children be restrained when riding. However, if conditions require that a child must stand, he should stand on the floor directly behind the front seat. This will minimize the possibility of his being thrown from the rear compartment during a sudden stop.

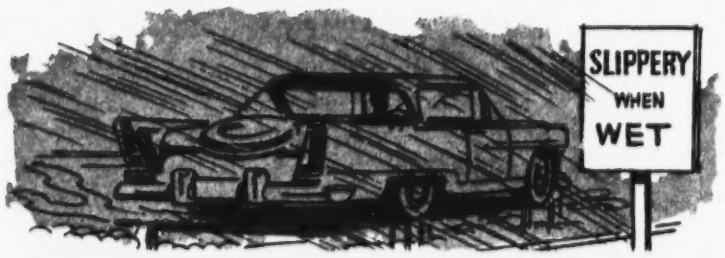
- Pre-collision positioning

  By "pre-positioning" the body, a person can lessen the severity of frontal impact with the vehicle interior. This "pre-positioning" technique calls for reducing the space between one's body and the vehicle interior. Practice may make its employment automatic in an accident situation.

  The instructor should demonstrate how a driver, wearing both lap and shoulder belts should lean forward into the restraint system, grip the upper rim of the steering wheel with both hands, and rest the arms with elbows out on the steering wheel rim. Maintain control of the vehicle until the last possible moment; then bend the head forward. If the shoulder belt is not worn, the driver should at the last moment rest his forehead on the backs of his hands.

  A front seat passenger, wearing both shoulder and lap belts should lean into the shoulder belt, place hands and forearms on top of the instrument panel, with elbows out to the side and the head bent far forward. A back seat passenger, wearing a lap belt only, should lean forward and rest head on arms on the top of the front seat back rest. Children or short adults in front or back seats who cannot hit instrument panel or seat back with their heads should lean far forward with head down and wrap their arms beneath and around their upper legs.

  While these positions cannot protect the occupants in all types of accidents, they can aid in reducing the severity of injuries in many cases.



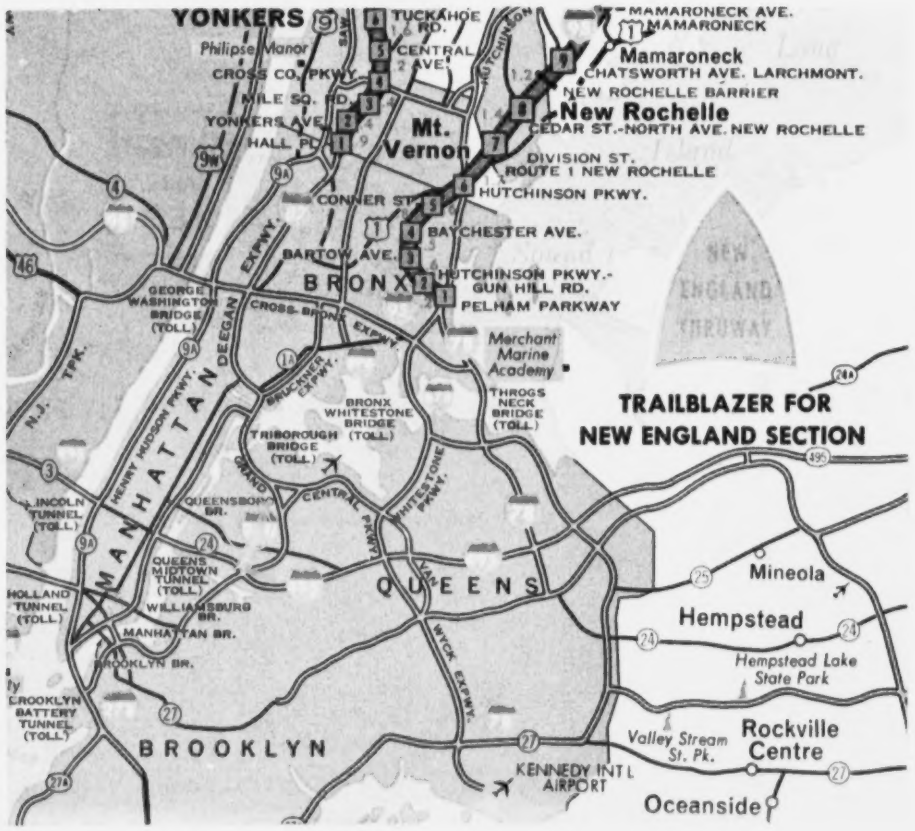
Wet roads increase the distance required to stop.

TOPIC SIX

TRAVELING UNKNOWN ROADS

The instructor should present information concerning sources which provide aid to travelers and encourage senior citizens to take advantage of these services.

- Automobile service clubs
- State police can advise on construction detours and traffic conditions.
- Some radio stations also spot announce traffic conditions at peak hours.
- Gas stations
- Maps - city and state Senior citizens may appreciate knowing where to procure reliable up-to-date maps. They may also need aid in map reading. If so, perhaps one of the class (i.e., a retired engineer, surveyor, or salesman) can provide instruction for such a session. He or the teacher should include an explanation of how to read the official New York State Thruway map with special emphasis on using the mileposts to locate interchanges, parking areas, and rest stops.



Efficient drivers plan their routes with care.

TOPIC SEVEN

MANMADE LAWS AND THE DRIVER

Motor vehicle regulations are being continually modified by such factors as contemporary highway usage, emerging traffic patterns, and changes in motor vehicle design. Since ignorance of the law is no excuse, it is necessary for each motor vehicle operator to keep up with current motor vehicle regulations.

The instructor might begin by administering a test of recent motor vehicle regulations and asking each person to correct his own paper. This will provide the opportunity to review many motor vehicle regulations informally without embarrassment or alarm to the class.

The New York Motor Vehicle regulations which apply especially to the senior citizen are the following:

- To obtain a New York license, the applicant must pass a vision test, demonstrating that his visual acuity is at least 20/40 in either or both eyes, with or without corrective lenses. He must pass this examination each time the license is renewed.

- If he is physically handicapped, he must demonstrate to a license examiner that he is capable of driving a motor vehicle safely, using devices which compensate for his physical disability.

- Should a licensed driver suffer permanent loss of use of an arm, a hand, a leg, a foot, or an eye, he must notify the Department of Motor Vehicles for scheduling of a reexamination. Naturally, complete loss of eyesight results in revocation of a license.

- Certain illnesses (i.e., convulsive disorder; epilepsy; fainting, or dizzy spells, or any other condition which causes unconsciousness; certain heart ailments; mental illness; or narcotic addiction, etc.) must be reported on the license application. A physician's certification is required for issuance or renewal of a license.

- All restrictions endorsed on the license must be obeyed. If not, the driver will be considered unlicensed. To remove any restriction from the license, he must apply to the Department of Motor Vehicles.

- It is unsafe to drive when ill or taking medications which adversely affect ability to see or to handle oneself properly, or when overtired, emotionally upset, or under the influence of alcohol or drugs.

TOPIC EIGHT

(optional)

ACQUIRING A MOTOR VEHICLE AND INSURANCE

- Acquiring a motor vehicle

When purchasing an automobile, the senior citizen should give consideration to the power options and accessories which aid in compensating for physical limitations (See Session 4.). In addition, he should ascertain that safety harnesses, both lap and shoulder belts, are comfortable, conveniently stored, and easily fastened and unfastened. (Some buckles are difficult to operate with stiff or arthritic hands.) Other options which senior citizens should consider as a means of increasing their comfort and their ability to concentrate are air conditioning, extra foam cushions, tinted windshield, power locks, power windows, power seat, tilt steering wheel, and automatic headlight dimmer.

Before accepting delivery of a motor vehicle, the senior citizen should check the operation of the parking or emergency brake, as these require considerable effort to set unless properly adjusted.

For most people, an automobile is a sizeable investment. Realizing this, the majority of automobile dealers make an honest effort to see that the interests of the buyer are safeguarded. However, the senior citizen will be able to buy with greater confidence if he heeds the following advice and asks himself the questions that are raised.

- Buy from a recognized dealer.

  Does this dealer try to satisfy his customers? Have you talked with any of them personally? Did they feel they paid a fair purchase price? Are they satisfied with the service? Are they repeat customers?

  Is this dealer recommended by the local Chamber of Commerce or Better Business Bureau?

- Be wary of "$1-down" deals.

  Why does a dealer make such an offer when it is customary to make a deposit of about one-third of the car's value on a loan?

- Consider purchasing only if you have a third of the cost as a down payment.

  If a person has to borrow to meet the down payment, how can he afford to pay off two loans at one time?

- Insist on test driving the car yourself or having a good mechanic test drive it for you before you sign the purchase papers.

  Am I willing to depend upon the dealer's or manufacturer's guarantees and warranties to correct any malfunctions which might be revealed after I buy the car?

  What recourse do I have, if I find that I am not satisfied with the car's riding or handling characteristics?

- Read a contract carefully before signing it.

  Have I filled in all the blanks with the proper information or the word "none?"

- Check all the charges before making any down payment.

  Has the basic price, price of options, transportation charges, dealer's preparation costs, and taxes all been itemized and totaled in a written contract signed by the dealer.

- Beware of exceptionally small monthly payments.

  Will there be a large "pick-up payment" due within several days?

  Will there be a "balloon payment," a large lump sum, added after payments have been made for two years?

- Insist upon on all guarantees in writing.

  What specific parts are covered by the guarantee? Will defective parts be replaced by new or rebuilt items? Is the cost of labor included? Are there time and/or mileage limits?

- If financing a car, shop around for the lowest interest rate.

  If the dealer is encouraging me to finance through a company he is recommending, is it because he receives a "kickback"?

  How do the interest rates of Company A compare with Company B? How much actual interest will I pay each month? Each year? Am I paying interest on the entire amount borrowed for a specific period or on a reducing principle?

- Check engine number and body plate to see that the car numbers and description correspond to those on the contract, certificate of ownership, and registration.

  Has the dealer supplied me with all the information I need to register the automobile?

- Acquiring automobile insurance

The teacher should utilize the services of an authorized insurance agent as consultant for this session. Senior citizens should realize that inadequate insurance coverage could jeopardize their life savings and retirement plans. They should review their existing policies, and, if necessary, increase coverage to meet the expanded liabilities that are currently possible. This information needs to be periodically updated.

In addition, senior citizens should question their own agent regarding the carrier's policy of guaranteed renewal for those policyholders 65 years of age and older. Certain insurance carriers guarantee renewal.

The following outline is intended to serve as a guide for the course coordinator or for the insurance agent engaged as a consultant.

- Insurance protects the motor vehicle owner and others from financial losses from accident, fire, theft, etc.

- The basic principle of insurance is spreading of risk.

  All insurees help to pay each other's losses.

  An insurance policy usually covers personal liability, physical, and property damage.

- A person causing injury or damage to another person's self or property is financially liable for his actions.

  An operator can be held responsible in both criminal and civil actions.

  Negligence is the key to whether or not a person is declared liable for damages to another individual's person or property.

  If a court finds one driver completely at fault, it will order him to pay the victim for his losses. (Judgment)

  Liability insurance pays for judgments *within the limits of the policy*. If the judgment is more than the policy limit, the owner of the vehicle must pay the excess.

  In most states, if the court finds that both operators were at fault in an accident, no matter what the ratio of fault might be, neither can collect under anyone's liability insurance coverage. (Some states have comparative negligence.)

- Liability insurance furnishes protection in case the owner of the vehicle is liable for accident damages or sued.

  Bodily injury liability insurance covers the owner for the injuries caused to another highway user.

  Property damage liability insurance (P.D.L.) covers the owner for the damage done to property.

Liability insurance is the most important motor vehicle insurance coverage.

Liability insurance protects the owner of the vehicle ("named insured") plus all members of his household and anyone who has *permission* to drive the car.

- Physical damage insurance is designed to compensate the owner for certain losses caused to the vehicle and/or property.

  Collision insurance pays for damages to the policyholder's vehicle caused by collision or upset.

  Comprehensive auto insurance pays for damage to the policyholder's vehicle caused by something other than a collision or upset.

- There are many additional types of insurance that fall into the special coverage category which have special value in certain situations.

  Medical payments insurance covers medical and funeral expenses (up to policy limits) for the policyholder and those injured or killed while riding in his car.

  Road service insurance pays towing charges if the policyholder's vehicle breaks down on the road.

  Uninsured motorist protection protects the policyholder, his family, and other passengers in his car from bodily injury losses caused by the uninsured or the hit-and-run driver who is legally liable for the damages.

  Automobile Insurance Plans (formerly known as assigned risk plans) are placement services developed by the insurance industry to help persons who have difficulty finding an auto liability insurer.

- Many factors influence premiums for vehicle insurance.

  The way people in a particular city, county, and state drive has a lot to do with how much they pay in premiums.

  The cost of repairs is also a determinant of automobile insurance premiums and is influenced by the rising costs of labor and replacement parts, the *integrity* of vehicle owners involved in accidents and the garage owners who repair the vehicle, and the number of fake claims.

  The number of court judgments also influences vehicle insurance premiums.

  State insurance departments regulate insurance companies closely, including approving or not approving company rates.

TOPIC NINE

(optional)

MECHANICAL KNOWLEDGE HELPFUL IN OPERATING A MOTOR VEHICLE

The safe, efficient operation of a motor vehicle requires that the driver understand the function of the various instruments, controls, and safety features within his reach; that he be familiar with the positions of all instruments and controls and be able to interpret them with only a swift glance; and that he can manipulate them without taking his eyes off the road.

Senior citizens like to talk and, like anyone else, prefer to talk intelligently. The senior citizen who is driving and maintaining a motor vehicle is certain to have occasion when he wishes to refer to its parts when speaking to his peers and mechanics. For this reason, he may wish to become familiar with nomenclature, and to a limited extent, know the functions of basic components of the modern automobile.

It is recommended that senior citizens join any one of a number of automotive service clubs and take advantage of their emergency road service rather than attempting to make repairs themselves. Many repairs, especially tire changes, require physical strength which may be greater than the elderly driver possesses.

The instructor should avoid providing explanations beyond those which are essential to the safe operation of a motor vehicle. For example, knowing where the cables are attached to the battery may prove useful in the event of an electrical fire or a horn blowing continuously, or knowing that a noisy muffler indicates the presence of dangerous gases may prevent a hazardous situation from developing.

The senior citizen must be especially confident that the vehicle he is driving is safe and reliable. Periodic maintenance is a major deterrent to on-the-road breakdowns.

The senior citizen should have a responsible mechanic check the following items according to a schedule recommended by the automobile manufacturer.

- engine oil and filter
- battery - level and specific gravity of electrolyte
- radiator level
- chassis lubrication
- automatic transmission fluid

- brake fluid
- brake linings
- engine tune up
- gasline anti-freeze
- tire wear
- windshield washer fluid level
- fan belt
- fluid level of power system reservoirs
- air in spare tire
- condition of windshield wiper blades

In addition, the senior citizen should assume responsibility for

- keeping windows clean
- checking all lights
- keeping a flashlight with fresh batteries in the glove compartment
- keeping a supply of sand or salt in the trunk during the winter months
- keeping a highway emergency kit in the trunk. Those which may be purchased from automotive dealers usually contain
  - first aid equipment
  - emergency flares
  - pneumatic tire inflator
  - "help needed" signaling devices
  - fire extinguisher

TOPIC TEN

(optional)

NATURAL LAWS AND THE DRIVER

If the participants show enough interest in this topic to warrant its being introduced, then the instructor must be careful to select only those aspects of the topic that will maintain that interest. The concept to be emphasized throughout this topic is that control of vehicle movement depends substantially upon the friction on small spots where the flattened out part or "footprints" of the tires contact the roadway.

- Friction is the resistance to motion between two surfaces.
  - Four basic kinds of frictions are:

    static friction - the holding force between two surfaces at rest

    sliding friction - the resistance to motion between two surfaces which are moving across each other (somewhat less than static friction)

    rolling friction - the resistance to motion of a rolling object like a ball, cylinder, or wheel (small compared to static or sliding friction, which is the reason for using wheels instead of sled runners)

    internal friction - the resistance to motion within elastic objects (tires get warm from internal friction as they flex)

  - Amount of friction between two surfaces depends upon the

    substance of the material - metal, wood, rubber (the softer the material, the more friction)

    roughness of the surfaces (the rougher the surface, the more friction)

    amount of force pushing the surfaces together (the more force, the more friction)

    presence of "lubricants" - oil, water, leaves, etc. - which tend to hold the surfaces apart, thereby reducing friction

  - Amount of friction between two surfaces (coefficient of friction) is calculated by dividing the amount of force necessary to pull one surface over another by the amount of force pressing the two surfaces together (weight).

- Traction (adhesive friction) is essential to vehicle control.

- Traction is needed on the drive wheels to make the vehicle go, on the front wheels for steering, and on both front and rear wheels for directional control and braking.

- A spinning wheel, (sliding friction) does not provide as much traction as a rolling wheel; therefore, the skill of starting a car on a slippery surface lies in applying the power to the drive wheels so they do not lose their grip on the surface.

- It takes more force to start a vehicle moving than it does to maintain movement, because:

  Static friction is greater than sliding friction.

  Inertia must be overcome.

- Normally, a vehicle moves in the direction the wheels point, because the "rolling friction" of wheels moving forward or backward is much less than the "sliding friction" of side movement. Exceptions are:

  When centrifugal effect in a turn is greater than the frictional force of the tires, the tires will slide sideways.

  When brakes are applied hard enough to slide the tires, there is no rolling friction.

- Although traction is increased by the weight of a vehicle, a heavier vehicle will not stop in a shorter distance, because the added traction is balanced by the added inertia of that weight.

- Many factors affect the gripping efficiency of road surfaces.

  - Surface materials (concrete, asphalt, gravel, and dirt) have different coefficients of friction.

  - Dry surfaces have a much greater gripping efficiency than when wet.

  - At the beginning of rain, particularly after a dry spell, the water combines with oil and dirt of the surface to form an emulsion that is extremely slippery.

  - Loose sand and gravel, stone chips, mud, wet leaves, oil and grease also tend to lower gripping efficiency.

  - Ice and snow provide very little frictional grip.

  - Ice patches under an overpass, around shaded curves and other spots blocked from the sun provide a deceptive hazard because they thaw more slowly.

  - As temperature rises within the freezing range, ice, and to a lesser degree snow, becomes much more slippery (braking distance doubles with temperature rise from 0 to 32° fahrenheit).

- Bridges freeze before other road surfaces, and also thaw first.

- Bumpy washboard roads also greatly reduce the friction grip of tires on the road and result in difficult steering and braking. (The vehicle suspension system helps to keep the wheels on the road surface.)

- Coefficients of friction are likely to be the lowest at approaches to intersections (a particularly bad place) from the wear of vehicles starting and stopping and also oil drippings from cars and trucks.

- Tires are an integral part of the braking system, the steering system, and the drive train that transmits the power from the engine to the roadway.

  - Tire treads provide traction on wet surfaces by furnishing an outlet for water squeezed by the tire groovings as they cut into the film of water.

  - The groovings of tire treads also provide ventilation to combat heat buildup caused by friction of flexing treads.

  - Variance in tire tread depth and inflation pressure can create steering difficulties, instability, and uneven braking. Rotating tires at regular intervals helps to equalize the wear of all five tires.

  - Letting air out of tires does not increase traction; in fact, it may even increase the tendency to skid on turns.

  - Either overinflation or underinflation of tires causes an improper contact with the road surface and also causes excessive wear.

    Underinflated tires cup in the center causing shoulder wear and difficult steering, especially in cornering.

    Underinflated tires overheat from friction, caused by sidewall flexing,which reduces the strength and durability of the tires.

    Wear confined to the center of the tire indicates that the tire has been overinflated.

    Overinflated tires are easily damaged because the cords cannot flex and absorb road shock.

- Snow tires (including studded tires) improve traction and stopping distance on ice and snow, but tire chains are more effective under those conditions.

The speed of a vehicle must be adjusted by the driver in accordance with vehicle and personal capabilities, environmental conditions, manmade laws, physical laws, and the driver's directional objectives.

- Power, available to the driver via the accelerator pedal, is made possible in internal combustion engines, by the interaction of the fuel and electric systems assisted by the lubricating and cooling systems.
    - The burning of a gasoline-air mixture in an enclosed space (cylinder) is the source of power.
    - Most vehicles have four, six,or eight cylinder-piston-spark plug combinations each fired at a different moment to provide a continuous and smooth power production.
    - Four strokes of the piston represent a cycle repeated many times over,which is the "heartbeat" of a motor (intake, compression, power, and exhaust.)
    - A supply of high voltage electricity is supplied to each spark plug in proper order and timing by the distributor, in cooperation with other components of the ignition system.
    - When the ignition and starter switch (usually combined) are turned on, the electricity flows from the battery to the small electric starter motor which spins and cranks the gasoline engine.
    - The lubricating and the cooling systems are needed to keep the engine going.
    - The engine's power is transmitted from the engine through the transmission, the drive shaft, and the differential to the car's rear wheels.
- A moving automobile, just as any other body in motion, possesses what is known as kinetic energy produced by its mass (weight) and its velocity.
    - The potential energy stored in gasoline is changed to kinetic energy by the car's engine.
    - Kinetic energy (momentum) keeps the car rolling when the foot is removed from the accelerator and there is no help from the engine.
    - Kinetic energy increases in a geometric progression (as the square of the speed).
    - To stop a moving vehicle, kinetic energy, which cannot be destroyed, must be converted in form to heat by rolling to a stop, braking to a stop, or colliding with an obstacle.
- Acceleration, the vehicle's capability to increase from a given speed or stationary position to a higher speed,depends upon a variety of factors.
    - Engine power and gear ratio are dominant variables in determining acceleration capability.

- Other factors influencing acceleration are:

  traction of the drive wheels

  driver selection of proper gear ratio

  the driver's use of the accelerator pedal and related feedback

- To accelerate upgrade, the engine has to overcome the force of gravity in addition to the usual work of moving the car.

- Deceleration, a decrease in the rate of speed of the vehicle, can take place through means other than braking.

  - When the pressure on the accelerator pedal is decreased, the car slows due to a retarding force of the engine compression, air resistance, and frictional forces between the tires and the road surface and in the moving parts of the engine and power train.

  - Downshifting (selecting a lower gear ratio in a manual transmission car), in combination with less pressure on the accelerator, produces a sufficient retarding force for control in some situations and also saves brake linings.

  - On a down grade the driver can compensate for the pull of gravity by releasing the accelerator, braking or shifting to a lower gear depending upon the degree of slope.

  - Taking your foot off the accelerator suddenly creates an effect that is similar to applying your brakes, a reality to be considered on slippery surfaces.

- The tendency of a moving body to continue at the same speed and in the same direction (inertia) unless another force is applied confronts the vehicle operator as he strives to maintain directional control during turning movements.

  - On a curve the turning of the front wheels is the force applied to change the direction of the vehicle (provides a side thrust).

  - In a curve, friction and the force of gravity combine to help keep your car from skidding off the roadway.

  - "Centrifugal" effect, a term of convenience to describe the effect of inertia when a car rounds a curve, varies at a geometric ratio- the square of the speed.

    Car speed is the most important variable in controlling a vehicle on a curve, because of its dominant influence on centrifugal effect, and is a factor over which the operator has direct control.

    As the radius of the turn is reduced, the centrifugal effect is increased and consequently the slower you will have to drive to get around it safely.

Centrifugal effect increases directly with the weight of the vehicle; however, an increase in the coefficient of friction due to the added weight helps to balance this negative factor.

- Besides the radius of the curve and the weight of the vehicle, other environmental, vehicular, and operator factors determine the safe speed for curves.

  When a vehicle is cornering, the front wheels lead the rear wheels in such a manner that the tracts of the rear wheels are inside those left by the front wheels.

  The coefficient of friction between the tires and the road surface is the most significant factor in determining the safe speed on a curve.

  Whether the road is banked, flat, or crowned makes a considerable difference in the safe speeds for negotiating a curve. (Crowned roads are banked the wrong way for a left hand turn.)

  Properly functioning shock absorbers increase cornering ability as they work with friction and gravity to combat centrifugal force.

  The dimensions and weight distribution of a vehicle have much to do with its cornering stability and the ease with which it can be handled on turns and curves.

  Proper tire pressure is important for optimum vehicle performance on a curve. Cornering ability tends to improve with the increase of pressure at a constant load, because of the increase in sidewall stiffness.

  Oversteering on a turn generally results from accelerating too soon or failing to return the steering wheel to straight ahead soon enough.

  Braking the vehicle after entering the curve will tend to play into the hands of inertia and cause the vehicle to plow straight ahead on a tangent to the curve.

  If the driver enters a curve below the critical speed (speed at which frictional forces will break loose) he can accelerate coming out of the curve.

  In determining the safe speed for curves, engineers have considered vehicle and driver capabilities and also the physical forces involved.

- Proper choice of speed is a major tool to be used in coping with highway hazards. As speed increases the time available for identifying, predicting, deciding, and executing decreases.

- Objects and obstructions on or near the intended path of the vehicle (rocks, glass, barricades, fallen branches, curbs, poles, mailboxes, etc.) create a hazard that drivers must reckon with by speed and/or direction adjustment.

- Accurate speed adjustment is particularly critical on older roads built for cars of their day and frequently inappropriate for the characteristics of modern vehicles. Some examples are:

  numerous curves and hills

  narrow lanes and bridges

  low, narrow, and soft shoulders

  many near-roadway obstacles

  changes in the number of lanes

  poor or no markings

  deteriorating edges, chuckholes

- Any speed can be excessive.

  - The small amount of time gained by increased speed (80 m.p.h. compared to 70 m.p.h.) does not justify the added risk.

  - A driver's sense of speed, not particularly keen at best, is distorted further under certain conditions (velocitization).

    The type of vehicle being driven affects the driver's sense of speed (height of eyes above the road, noise level, and vibration level.)

    Cars seem to be moving faster when the windows are open.

    There is a tendency for sustained high speed driving to dull a driver's judgment of speed.

    Glancing frequently at the speedometer will help the driver to remain aware of the speed (particularly important on the freeway exit ramps and for a while after leaving the freeway).

- Vehicle codes include more than one kind of speed limit.

  - Absolute speed limits, both maximum and minimum, serve as a guide to the driver in selecting appropriate speeds for varying conditions.

    Persons drive in a variety of environments for the first time and therefore need some advice in selecting a reasonable speed.

    The underlying principle is that above or below certain limits speed in and of itself is dangerous and therefore illegal.

Maximum speed limits vary with types of vehicles and with times and locations.

A maximum speed limit does not give the operator permission to go that fast; it merely suggests the speed at which he may travel under ideal conditions.

Speed limits are or should be determined by engineering studies which take into account natural laws.

- In addition to absolute speed limits, drivers at all times operate under a basic speed law.

  This regulation compels the driver to use good judgment in scaling down the absolute speed limit to fit the conditions prevailing at a given time and place (reasonable and prudent speed).

  Although there is less chance that the driver will be cited for violating this speed law, compared to absolute, it is a more important law for him to self-enforce insofar as his and others' safety is concerned.

- Some states include a prima facie speed law which combines features of both the absolute and the basic speed law.

- Data tends to show greater heed is paid to speed advisory signs, warning drivers of a hazardous situation, than to the regular speed limit signs.

  - Warning signs (diamond shape) are usually intended to help the driver perceive a hazardous situation by bringing the information to the driver in advance of the point where he could see it, especially where visibility is limited.

- In order to stop a moving vehicle (a body in motion tends to remain in motion), friction must convert kinetic energy into heat.

  - On a level road with foot off the accelerator,the car will eventually roll to a stop without braking because the rolling friction between tires and road surface, the friction of the moving parts, air resistance,and the engine compression all help to slow down the vehicle. The car will stop in a shorter distance going uphill, and conversely downhill, because of the additional force of gravity.

  - In a normal braking stop,it is the frictional drag of the brake lining against the brake drums that slows the revolving wheels, and the tires transmit the braking force to the road surface.

  - In a locked wheel stop, energy is dissipated through heat generated between the sliding tires and the road surface.

  - In a collision, energy is dissipated by crushing and bending the metal of the vehicle.

- Braking efficiency is influenced by a number of factors.
  - Wear, grease, and water reduce the efficiency of the brake lining and drum contact points.
  - Liquids cannot be compressed; therefore, hydraulic fluid in brake lines running from a master cylinder to each wheel cylinder transmits pressure as effectively as a steel bar, assuming high quality brake fluid and a tight system.
  - If all four wheels are *not* braking equally, braking distance for a given speed will increase and steering will be unpredictable.
  - The front wheels are required to do more work than the rear wheels because of weight transfer.
  - Power brakes assist the driver in applying brake pressure but do not affect the amount of friction or braking force generated.
  - The coefficient of friction between the tires and the road surface governs the maximum braking force usable. The most powerful brakes are useless without traction.
  - Maximum braking force is obtained just before the wheels lock.
- When brakes are applied too firmly or too suddenly the friction between the brake lining and the brake drum is so much greater than the friction between the tires and the road surface that the wheels stop or lock before the vehicle stops.
  - If the wheels lock, the friction between the tires and the road is the major determinant of the length of the stop.
  - The lower the coefficient of friction between the tires and the roadway the less effort required to lock the wheels.
  - In a locked wheel stop, heat generated between the tires and the road surface tend to melt tire rubber or ice thus reducing further the coefficient of friction.
  - Locked wheel braking in effect takes away your steering control.

    Rolling friction between tires and roadway is essential before the direction of the vehicle can be changed by the use of the steering mechanism.

    Although steering control is lost in a locked wheel stop, braking distance may not be significantly different; in fact it may be shorter.
- Since kinetic energy, which must be changed to heat by braking, varies in a geometric progression, so does braking distance. (Double the speed and braking distance increases four times; triple the speed and braking distance increases nine times.)

- Although this assumes a locked wheel stop, any other braking technique will produce approximately the same distance or longer.

- When speed remains constant, braking distance varies *inversely* with the coefficient of friction between the tires and the road surface. (When the coefficient of friction is reduced by 1/2, braking distance is doubled.)

- Weight of the vehicle does not change braking distance significantly in a *locked wheel stop*.

- A vehicle equipped with bald or threadbare tires will slide considerably farther on a *wet* surface than the same car equipped with tires having good tread. A driver can be lulled into a false sense of security because of the relatively good stopping ability of bald tires on a dry surface.

- Total stopping distance equals the distance a vehicle travels during the time needed by the operator for identification, prediction, decision, and execution, plus the time required for the brakes to stop the vehicle after the brake control has been activated.

  - Feet per second serve as a basis for determining distance traveled in a given time. To convert miles per hour to feet per second, multiply the miles per hour by 1.47.

  - Distance traveled in feet per second during these functions varies directly with the time. Distance equals time multiplied by velocity.

  - Identification, prediction, and decision-making time vary widely with the complexity of the circumstances and the capability of the driver. They may vary from a fraction of a second when a red light suddenly appears to a few seconds in a highly discriminative type situation.

  - Execution time varies between individuals due to muscular coordination and skill, and it also varies for the same individual at different times (fatigue, alcohol, drugs, etc.). Covering the brake pedal (foot poised on brake) when uncertain conditions lie ahead reduces execution time if braking becomes necessary.

- Proper technique in braking can provide smooth stops, prevent accidents, and also add miles to the life of the brakes.

  - Braking technique becomes more critical as vehicle speed increases.

  - For efficient braking, foot pressure should conform with the speed so as to use minimum pressure to stop in required distance or time.

  - Releasing the brake pedal slightly just prior to stopping point, permits the vehicle to level and prevents a "snap-back" effect.

- A slight pumping action of the brake pedal serves to test the proper functioning of brakes, check the traction between the tires and the road surface, and provide a brake light warning to following traffic.

- When compelled to stop quickly, particularly on a wet or icy surface, intermittant application of the brake pedal (pumping action) will minimize the danger of skidding, and steering control will be maintained. The up-phase permits the tire to roll.

- When continuous braking is required for a period of time, such as on a long steep downgrade, shifting to a lower gear before starting downwards will provide engine braking power, take some of the strain off brake linings, and help to prevent brake fadeout.

  However, some automatic transmissions will *not* downshift above a certain speed.

Children can be expected to do the unexpected.

TOPIC ELEVEN

(optional)

COOPERATING WITH AGENCIES AND INSTITUTIONS CONCERNED WITH HIGHWAY SAFETY

Private citizens can influence the development and management of the highway transportation system. Responsibility with respect to the highway transportation system extends beyond what we do as vehicle operators; it includes nonoperating activity that contributes to overall system efficiency and improvement.

- Regardless of occupation or status, in a democratic society channels are open for concerned citizens to voice opinions and suggestions regarding public problems. The concerned citizen will:

  - help to stop rumors, myths, and misdirected actions by uninformed citizens with good intentions, who think they have a solution to some phase of the traffic problem

  - seek out information on the needs, problems, and plans of local and state traffic officials and help them to gain support for sound programs by

    exercising the privilege of voting

    directly influencing individuals and groups with whom they associate

    working through traffic safety councils and other citizen support organizations, or

    making personal appearances before a county board of supervisors or a state legislator to explore an opinion about what should be done

- exercise his right to vote for or against public officials at all levels, and in doing so, consider their apparent degree of interest in improving the highway transportation system

- send directly to the responsible state officials or to a state legislator complaints, compliments, and suggestions regarding state administered programs (vehicle inspection, driver licensing, etc.)

- become informed about proposed state and federal legislation related to highway transportation, and help legislators make wise decisions with respect to traffic legislation by informing them of their views

- communicate ideas and suggestions regarding federal standards on traffic safety to the National Highway Safety Bureau or to their U.S. Congressman

- communicate complaints, suggestions for improvement, and compliments regarding his vehicle to his dealer, the manufacturer, or to the National Highway Safety Bureau

- Before embarking on an effort to improve an element of the highway transportation system, the responsible individual seeks out reliable information concerning the forces impinging on the problem.

  - The more closely he becomes involved with a public question, the more personal it becomes and the less rigid he is about it.

  - Facts as well as good intentions are needed if problems are to be solved; otherwise, citizen support may represent a pooling of ignorance that interferes with progress.

  - Traffic safety is too large to comprehend, much less solve, in one "fell swoop," but, if manageable elements are worked on under a coordinated plan, observable progress can be accomplished. (A safer intersection; more orderly traffic and parking around the school; a better traffic court; a qualified driver education teacher; first aid training for ambulance drivers -- each contribute to system efficiency and effectiveness.)

  - Highway safety officials are working on a *public* problem and therefore are obligated to balance the needs and desires of special interest groups with those of the public at large and make decisions on the basis of what is best for the system. Good reasons may be present for not making the change *you* believe is needed.

  - Resources are limited; therefore, decisions regarding the expenditure of public funds for improving the highway transportation system must be weighed against the demands for other public programs.

- Sometimes an individual operating alone can stimulate action quickly and effectively, but more often the individual needs to enlist the support of other individuals and groups and enthuse them about the matter.

  - The good traffic citizen responds to others and operates jointly with them toward the goal of a better highway system.

  - Working with others toward a common goal is a stimulating experience.

  - Examples of individuals and groups that may be interested in carrying an idea forward are senior citizens groups, driver education and other teachers, youth groups, service clubs, Junior Chambers of Commerce, mass media, local traffic safety organizations, public officials, and legislators.

- Senior citizens may contribute time and talent to improving the highway transportation system by:

- suggesting and helping to arrange for qualified traffic officials to speak to the organizations to which they belong

- expressing their views about traffic safety around the school or in a community through letters to the editor of school and community newspapers, radio and television stations, or magazines

- helping the driver education teacher to identify the most meaningful content and methods for influencing young drivers

- reporting hazardous highway and traffic conditions in their community to the proper authorities (Examples of such conditions are a bad chuckhole, obstacles to vision, confusing signs or markings, and other conditions which obviously impede safe and expeditious movement of traffic.)

Many forces are at work to improve highway facilities, traffic movement, vehicle performance, and highway user performance.

- The construction and maintenance of highway facilities, and the control of traffic on those facilities, represents a huge task involving a multitude of resources.

  - The U.S. Department of Transportation, through its Bureau of Public Roads, administers the federal-aid highway program and, in cooperation with state highway officials, establishes standards for highway design, construction, and maintenance.

  - State, county, and municipal road departments control the building and maintenance of roads not under the federal-aid system.

  - U.S. Congress, state legislatures, and local governing bodies appropriate the funds for building and maintaining roads. (Derived for the most part from the highway user taxes on gasoline and oil, vehicle license fees, and excise taxes on tires.)

  - Federal, state, and a few local governments employ traffic engineers who are responsible jointly with the police and highway patrols for the safe, convenient, and rapid movement of highway traffic.

  - Private engineering consulting firms on a contract basis play a prominent part in planning, design, and operations phases of the highway system.

  - Universities conduct research related to highway construction and traffic movement, and also offer educational programs for highway safety and engineering personnel.

  - Junior colleges include preservice and inservice educational programs for traffic engineering technicians, police, and others.

- Industry and business - through foundations, boards, institutes, etc. - support research and educational activities designed to improve highway facilities and traffic flow.

- Road building is big business, heavily involving concrete and asphalt companies, sign and signal manufacturers, and other segments of the business and industrial world.

- Numerous official and non-official safety organizations influence highway facilities through the legislative process, public support, and other means.

- The design and operating condition of the vehicles used in the highway transportation system depends upon various factors.

  - In large measure the automotive and allied industries determine the design and operating characteristics and the reliability of vehicle performance.

  - The National Highway Safety Bureau has the authority to specify standards for new and used vehicles which

    simplify the driving task

    make the vehicle more crashworthy

    improve vehicle operating characteristics

    give additional protection to vehicle occupants

- Each state has a motor vehicle registration program which furnishes rapid identification of each vehicle and owner.

- State statutes specify certain minimum safety equipment standards for motor vehicles operating in that state.

- State and local vehicle inspection programs are designed to check periodically and assure correction of defective vehicle components affecting safe operation.

- Commercial organizations and governmental agencies operating large fleets of vehicles have carefully planned vehicle maintenance programs.

- Universities, through grants from industry and the federal government, augment research carried on by the automotive and parts industry to improve the safety and efficiency of automobiles.

- Junior colleges, technical schools, and the automobile industry train auto mechanics. (A serious shortage still exists.)

- Automobile agencies sell new and used cars; they also provide maintenance service to owners and thus influence the quality of vehicles on our highways.

  - The quality of vehicle maintenance work done by independent garages plays an important part in vehicle performance and safety.

- Many agencies and institutions strive to influence the behavior of highway users.

  - The National Safety Bureau sets standards for state highway safety programs related to driver education, driver licensing, codes and laws, police traffic services, traffic courts, motorcycle safety, alcohol in relation to driving, and numerous other areas.

  - Professional associations establish policies and recommendations, develop materials, and provide other services to stimulate and improve the behavior of highway users.

  - State departments (motor vehicle, education) are responsible for administering laws related to driver licensing and driver improvement, driver education, and school bus transportation.

  - Elementary and secondary school curriculums include the teaching of concepts designed to improve the behavior of highway users of all ages, as well as driver education specifically.

  - Colleges and universities affect the behavior of highway users by preparing traffic professionals (police, judges, engineers, driver education teachers), and also by conducting research on driver behavior and teaching methods.

  - Traffic laws are established by state legislatures and ordinances by city councils to influence and control the behavior of drivers and pedestrians.

  - State police or highway patrol, city police, sheriffs, and other police agencies serve as a deterrent to illegal and unsafe behavior on the highways.

  - Many different kinds of courts at various levels of government determine guilt or innocence and impose penalties upon those who are convicted of traffic violations.

  - Industry and business support foundations, institutes, councils, etc., that conduct activities directed at improving the behavior of highway users.

  - Mass media (press, radio, and TV) use their resources to influence the behavior of drivers and pedestrians.

  - The armed forces, commercial transportation, and other groups employing large numbers of drivers conduct their own driver-training programs, sometimes engaging the services of outside consultants.

- Insurance companies undertake studies aimed at improving the safety record of their policyholders and publish free materials for use in driver education programs.
- Environmental conservationists seek ways of decreasing the congestion and pollution caused by surface transportation.
- Commercial trucking firms display on their vehicles slogans that promote courtesy among highway users.

Modern highways are designed to be both functional and aesthetic.

APPENDIX

SAMPLE PUBLICITY ITEMS

SAMPLE POSTER

SENIOR CITIZENS:

IN WHAT YEAR DID YOU BEGIN TO DRIVE? 1919? 1924? 1930?

WOULD YOU WELCOME AN OPPORTUNITY TO:

- SHARPEN YOUR DRIVING SKILLS?
- LEARN TECHNIQUES FOR SAFELY DRIVING THE MODERN HIGHWAY?
- BECOME FAMILIAR WITH WAYS THAT EXTEND THE YEARS OF YOUR DRIVING COMPETENCY?

LEARN IN THE FINE COMPANY OF FELLOW SENIOR CITIZENS.

WHERE? BRIARWOOD CENTER FOR SENIOR CITIZENS
WHEN? MAY 1 - JUNE 15
TUES. & THURS. 2:00 P.M. TO 3:00 P.M.

FOR FURTHER INFORMATION OR REGISTRATION BLANK JUST PHONE MR. KNIGHT, DIRECTOR OF CONTINUING EDUCATION, NORTHSIDE SCHOOLS AT 792-1130 OR CONTACT MISS NOONAN, ACTIVITIES DIRECTOR OF THE BRIARWOOD CENTER.

SAMPLE NEWS RELEASE

SAMPLE FLYER

SAMPLE RADIO OR T.V. ANNOUNCEMENT

The Northside School District in cooperation with the Briarwood Center for Senior Citizens will sponsor a course designed to update the driving competencies of the elderly. Senior citizens of the community who do drive will welcome this opportunity to sharpen their driving skills and become familiar with the latest changes in motor vehicle regulations, automotive designs and options, and techniques needed to safely operate a motor vehicle on modern highways.

In addition, the course will provide for those senior citizens so choosing, a personal evaluation of driving knowledge and ability. This will be accomplished through a volunteer program of self-assessment. Mr. Day, Coordinator of the program, will be stressing the compensations that can be made for various limitations in driving that might be imposed by advancing age.

Consultants from a number of agencies and institutions interested in promoting the safe and efficient use of the highways will be making presentations. The National Safety Council's film on defensive driving will be shown.

The course is planned to run for six weeks, meeting Tuesday and Thursdays from 2:00 to 3:00 p.m. at the Briarwood Center for Senior Citizens.

Enrollment is limited. Interested senior citizens who currently hold a driver's license and desire further details or registration blanks are urged to phone Mr. Knight, Director of Continuing Education, Northside Schools, at 792-1130 or Miss Frances Noonan, Activities Director at the Briarwood Center.

SUPPLEMENTARY INSTRUCTIONAL MATERIALS AND THEIR SOURCES

1. AETNA LIFE AFFILIATED COMPANIES
Information & Education Department
Hartford, Connecticut 06101
Dean R. Cook, Supt., Driver Education Services

Publications
"Stop-O-Dial" (Stopping Distance Calculator - Revised)
"The Open and Shut Case for Seat Belts"

Write for sample kit which includes material on highway and pedestrian safety.

Films
Subjects include highway, home, recreational, bicycle, and general safety topics. Write for free film catalog.

The Aetna Drivotrainer System
Information is available on the Aetna Drivotrainer system of instruction which employs a multi-place automobile simulator utilizing a sound motion picture film series for classroom training purposes. Write for "Drivotrainer Kit" and/or 16 mm sound film "You and the Drivotrainer System."

2. ALLSTATE INSURANCE COMPANY
Accident Prevention Division
7447 Skokie Boulevard
Skokie, Illinois 60076

Publications
"Are You A Good Driver?" - 12 pp.
"Avoid Rear End Collisions" - 6 pp.
"Drive Prepared" - 3 pp.
"Expressway Driving is Different" - 8 pp.
"Night's Deceiving Eyes" - 6 pp.
"Safe Driving Must Be Taught" - 6 pp.

Services
Each year grants are given to 40 colleges making it possible for these colleges to give scholarships to students enrolled in driver education courses.

3. AMERICAN AUTOMOBILE ASSOCIATION
Traffic Engineering & Safety Department
1712 G Street, N.W.
Washington, D.C. 20006

Publications (Materials should be requested through the local AAA Club - Single copies are free.)
"Bibliography of Driver Education Materials" - 8 pp.
"Driver Education Equipment Catalog" - 12 pp.
"Driver Education Services of the AAA" - 8 pp.
"Getting the Most out of Freeway Driving" - folder
"Pointers for Pleasant and Safe Driving" - folder
"Rules for Safe Driving" - card

Services
Various tests and text materials are developed for use in driver education courses. Testing devices, working models, and dual controls are designed for these courses. Text materials are provided free for colleges conducting summer short courses in driver education for high school teachers. Schools are assisted in obtaining the loan of dual control cars.

4. AMERICAN OPTOMETRIC ASSOCIATION, INC.
7000 Chippewa Avenue
St. Louis, Missouri 63119

Publications
"Do You Know These Facts about Vision and Highway Safety?"- H-14
"Driving Takes Seeing"
"Driving Tips for Senior Citizens"
"He Never Saw What Hit Him"
"I Didn't See It Coming" - 16 pp.
"The Optometrist and Safe Driving"

Poster
"I Didn't See It Coming"

5. AUTOMOBILE MANUFACTURERS ASSOCIATION
Educational Services
320 New Center Building
Detroit, Michigan 48202
Attention: Educational Services Director

Publications
"Automobile Facts and Figures" - 72 pp. bulletin published annually
"The World Makes an Automobile" - (chart) gives sources of supplies
"Quest; What Does It Take To Make Your Car"

6. CHEVROLET - CENTRAL OFFICE
Advertising Department
General Motors Building
Detroit, Michigan 48202
R. Timmington, Advertising Department

Publication
"Best Drivers Make It Look Easy" - 28 pp.

7. CHRYSLER CORPORATION
Community Affairs Department
P.O. Box 1919
Detroit, Michigan 48202

Publications
"Drive Like A Pro" - 16 pp. (Classroom sets available)
"Fuel Economy" - 15 pp. "
"Good Driving Practices" - 19 pp. "
"Magnetism and Electricity" - 33 pp. "
"Story of Combustion" - 30 pp. "
"Travel Tips" - 10 pp. "

Charts
"Chrysler Corporation Slant Six Engine" (35" x 45")
"Chrysler Corporation Chassis Components" (35" x 45")

8. FORD MOTOR COMPANY
Traffic Safety and Highway Improvement Department
The American Road
Dearborn, Michigan 48121

Publications
"Healthful Hints For A Safer Ride" (Brochure and 2 emergency signs: Need Gas; Send Help)

Filmstrips
Available on loan through Lincoln, Mercury, Ford Community Relations Dealers 6 packets of filmstrips covering 25 subjects in driver education.

For further information on both free and low cost items, contact Mr. Phil Gram of Ford Motor Company, Traffic Safety and Highway Improvement Department.

9. GENERAL MOTORS CORPORATION
Public Relations Staff
3044 West Grand Boulevard
Detroit, Michigan 48202
Attention: Brooks Marshall

Publications
The following booklets, size 5-3/8" x 8-1/4", are available in limited quantities at no charge for teacher use and reference purposes as long as the supply lasts.

"ABC's of Hand Tools" - 48 pp.
"Electricity and Wheels" - 32 pp.
"How the Wheels Revolve" - 32 pp.
"Optics & Wheels" - 32 pp.
"Right Behind the Wheel" - 29 pp.
"We Drivers" - 40 pp.

Charts

The following wall charts are 22" x 34", designed for classroom use. They offer simplified diagrams and explanations of the subject listed. Single copies free to teachers.

"Automobile Chassis"
"Automobile Fuel System"
"Automobile Ignition System"
"Body Construction"
"Brake System"
"Four-Stroke Cycle & Flame Travel"
"Horsepower for Safety"
"Rear Axle Assembly"
"Steering System"
"Three Speed Gear Transmission"
"Typical Gear Combinations"

Films

The following films are 16 mm sound motion pictures. They are loaned without charge -- the only cost being that of return postage to one of the General Motors Film Distribution offices. For full details concerning these and other films, and information on how to obtain them, write for "Motion Picture Catalog."

"The ABC of Hand Tools"
"The ABC of Internal Combustion"
"The ABC of the Automobile Engine"
"We Drivers"
"Where Your Mileage Begins"

10. GENERAL MOTORS CORPORATION
(GMC Truck & Coach Division)
Truck Service Training Activities
660 South Boulevard, East
Pontiac, Michigan 48053
E. E. Conner

Publications

"GM - PM" (Preventive Maintenance, X6632)
"Analyzing Driver Related Parts Failures (X6941)

11. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
Public Health Services
Washington, D. C. 20006
W. Wilson Taylor, Chief, Audio Visual Service

Films

(Available from nine regional offices. Write for list of offices)
"Broken Glass" - 15 min., color, sound 16 mm
"The Unexpected Moment" - 15 min., color, sound, 16 mm
"Interrupted Morning" - 13-1/2 min., color, sound, 16 mm
"Look Alive" - 15 min., black & white, sound, 16 mm
"Safety Through Seat Belts" - 13 min., black & white, sound, 16 mm
"Safety Belt for Susie" - 11 min., color, sound, 16 mm

12. KEMPER INSURANCE COMPANIES
Advertising Department
Chicago, Illinois 60606
W. B. Jones, Director Auto Club Division

Publications

"Accidents Are Preventable"
"Are You Fit To Drive?"
"How to Buy Car Insurance"
"Play Experts"
"Why Ask For An Accident?"

13. METROPOLITAN LIFE INSURANCE COMPANY
1 Madison Avenue
New York, New York 10010

Publications

"A Seat Belt Could Save Your Life"
"Your Health and Your Driving"
Miscellaneous safety posters are also available.

14. NATIONAL ASSOCIATION OF AUTOMOTIVE MUTUAL INSURANCE COMPANIES
20 North Wacker Drive
Chicago, Illinois 60606
J. C. Stennett

Publications

"Here's How" - 4th edition - 100 pp. - An illustrated booklet describing proved traffic safety projects gathered from all over the world. Each new edition of the publication contains an altogether new group of project ideas. Intended for committee use -- not for individual students.

15. NATIONAL SAFETY COUNCIL
School & College Division
425 North Michigan Avenue
Chicago, Illinois 60601

Publications (Single copies available free to high school and college instructors.)

"Alcohol and Traffic Accidents" - Data Sheet No. 19 (Revised)
"Catalog of Materials and Publications"
"Guide to Fact and Fiction about Seat Belt Safety"
"Highway Driving Rules and Precautions" - Data Sheet No. 52 (Revised)
"Motor Driven Cycles" - Data Sheet No. 36 (Revised)
"Motor Vehicle Speed" - Data Sheet No. 55
"National Safety Council Driver Education Section Policy Statement"
"Night Driving" - Data Sheet No. 31
"Traffic Safety Memo - Data Sheet No. 1 & 113
"Winter Driving" - Data Sheet No. 30
"You're Putting Me On" (Safety Belts)

Services

Offers "suggested guideposts for persons interested in the development of legislation relating to financial supports for driver education." Staff members will give assistance to schools. A large library is available for the use of any school. The "Honor Roll" gives recognition to schools having well-rounded safety programs. The National Safety Congress is sponsored each October.

16. NEW YORK UNIVERSITY
Center for Safety Education
Washington Square
New York, New York 10003
Walter A. Cutter, Director

Services

Offers both undergraduate and graduate courses in safety education and driver education and traffic safety, both on campus and at off-campus centers in cooperation with other institutions. Develops tests, texts, manuals, and other publications of interest to driver educators. Research is conducted by the staff and by individual graduate students. Interested persons are invited to write for descriptive brochure of the Center as well as for publication list.

17. ONTARIO DEPARTMENT OF TRANSPORT
Highway Safety Branch
Parliament Buildings
Toronto 2, Ontario
Walter B. G. Reynolds, Commissioner of Highway Safety

Publications

"Traffic Signs, Signals and Markings" - 20 pp. - 4" x 6"
"Freeway Safety" - folder. Twelve tips for freeway driving
"Tips for Winter Driving" - folder (Single copy available only)

18. RAYBESTOS DIVISION OF RAYBESTOS
Manhattan, Inc.
Bridgeport, Connecticut 06602

Publications

"Stop Smoothly Safely" - 16 pp.
"Stopping Distance Chart"

19. SHELL OIL COMPANY
50 West 50th Street
New York, New York 10020
Public Relations Department

Publication

"Perception of Driving Hazards" Three 35 mm colored filmstrips including a discussion leader's guide book. (Free)

INSTRUCTOR'S BIBLIOGRAPHY

AGING DRIVERS

Aging. "D. C. Auto Drivers Improve With Age Statistics Reveal," *Aging*, No. 166-67, Sept. 1968, p. 28.
Statistics show that drivers licensed in the District of Columbia improve with age.

Aging. "Older Drivers 37 Per Cent Safer Than Average in Thirty States, AOA backed Survey Shows," *Aging*, Mar. 1969, pp. 9-10.
A survey conducted by the U.S. Administration on Aging showed that over-65 drivers have a 37% better than average safety record in 30 states and The District of Columbia. Its figures showed that drivers tend to improve with age.

Aging. "267.8 Per Cent Increase Over Fifteen Years Shown by Sixty-five Plus Drivers in National Capital," *Aging*. Oct. 1968, p. 24.
A statistical study made the D. C. Traffic Reporter, monthly publication of The District of Columbia Department of Motor Vehicles, shows that the number of licensed automobile operators 65 and over in Washington has increased 267.8% between 1952 and 1967.

Brown, Kenneth B. "California Program Updates Senior Citizen Driving Skills," *Traffic Safety*, Oct. 1967, p. 20+
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Changing Times. "Who's Too Old to Drive?", *Changing Times*, Aug. 1968, pp. 45-47.
With good health, due care, and careful attention to driving regulations, a driver can keep on the road as long as he needs to.

Harvest Years. "National Study Shows Seniors Good Drivers," *Harvest Years*, May 1969, pp. 4-5.
A nationwide study of the driving records of over sixty-five motorists is so favorable it promises to improve insurability, license privileges, and public acceptance of the senior citizen as a competent motorist.

Hugunin, Elbert. "What's Ahead for the Aging Driver?", *Traffic Safety*, June 1960, pp. 12-14 + illus.
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Klamm, E. R. "The Aging Driver" in National Safety Congress, Transactions, 1961; v. 24, *Traffic Safety*. Chicago: National Safety Council, 1962, pp. 49-51.

Lashley, Glenn T. "The Aging Pedestrian," *Traffic Safety*, Aug. 1960, pp. 10-13.
Review of the problem and discussion of programs for aging pedestrians in several cities.

Mann, William A. "Problems of the Older Driver-A Pilot Study," *MSU Center Letter*, May 1960, p. 3.
Michigan State University Highway Traffic Safety Center study of twelve older drivers.

Marsh, Burton W. "Aging and Driving," *Traffic Engineering*, Nov. 1960, pp. 11-29.
Matson Award paper presented to the Institute of Traffic Engineers. Stresses need for additional research and programs on aging and driving. Contains information on existing programs and on possible effects of aging on driving.

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Newquist, Melvin N. "The Aging, Ailing Truck Driver; With Special Reference to the Motor Carrier Safety Regulations of the Interstate Commerce Commission," *Industrial Medicine and Surgery*, Mar. 1956, pp. 109-112.
Summary of ICC regulations, with recommendations for physicians who examine aging drivers subject to such recommendations.

Planek, Thomas W., and Fowler, Richard C. "A Closer Look at the Older Drivers," *Traffic Safety*, May 1969, pp. 8-11+, tables.
Chronological age alone is not a good predictor of driving performance. Medical fitness is a more useful approach to indicate the fitness of an individual to drive a motor vehicle. The older driver's limitations and deficits are counter-balanced by his increased experience and good judgment.

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Shipley, O. D. "The Aging Driver" in National Safety Congress, Transactions, 1961; v. 24, *Traffic Safety*. Chicago: National Safety Council, 1962, pp. 51-55.
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Sim, Robert P. "Age and the Professional Driver," *Traffic Safety*, Jan. 1964, pp.24-25+.
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Town, George. "Who's Fit to Drive," *Harvest Years*, Mar. 1969, pp. 19-21.
Most authorities agree that "functional" age rather than "chronological" age is the main factor in determining ability to drive. Good physical and mental conditions are necessary and enrollment in a driver improvement program, such as the National Safety Council's Defensive Driving Course ensures the driving competence of older drivers.

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Studies of aging drivers reveal that the senior driver is not only a good risk, but often may be among the safest motorists on the highway.

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This publication outlines ways in which aging affects the visual process and ways in which senior citizens can improve and better enjoy their motoring activities.

Denver. Driver Improvement School. *Colorado Senior Citizens Complete Novel Safety Education Course*. (1962). 6 pp. mimeo.
Release describing driver improvement course directed by Judge Sherman G. Finesilver.

"Driver Education Course Offered Senior Drivers," *MSU Center Letter*, Dec. 1959. p. 1.
Course offered by Michigan State University Highway Traffic Safety Center for drivers over 65.

Finesilver, Judge Sherman G. *Safety Tips for Senior Citizens, Pedestrians and Drivers*. Denver: Driver Improvement School, 1962. 25 pp.
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Physical Condition

American Medical Association, Committee on Medical Aspects of Automobile Injuries and Deaths. *Medical Guide for Physicians in Determining Fitness to Drive a Motor Vehicle.* (Chicago, 1959). 28 pp.
List of physical, mental and emotional conditions likely to hamper driving ability. Appeared originally in *Journal of the American Medical Association*, Mar. 14, 1959, pp. 1195-1207.

Lawton, Alfred H. "The Doctor Looks at the Older Driver," *Traffic Safety*, Oct. 1964, pp. 12-15+
More thorough physical examinations for the older driver are needed in order to obtain better information on the effect of aging on driving.

Mass, Roger B. "Safety Tips for the Hearing Handicapped Driver and Worker," *Between Friends*, Summer 1968, pp. 12-13.

McFarland, Ross A, and Alfred L. Moseley. *Human Factors in Highway Transport Safety*, Boston: Harvard School of Public Health, 1954, 295 p. illus., charts, diagrams, tables, bibliography.
Chapter 7, "Age in Relation to Problems of Highway Transportation."

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Effects of aging on night visibility are discussed.

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PROFILE TEST 1. (THIS TEST IS FOR EXPERIENCED DRIVERS)

YOUR PERSONAL CHARACTERISTICS

The following is a short test in which you are asked to rate yourself. You may wonder why certain questions are included but there's a reason for each. They are related to your attitude. Circle the letter which best corresponds with the word that describes your feelings or reactions. To obtain your score, see page 65.

Circle O for Often S for Sometimes N for Never

1. *Do you get upset when traffic is delayed for a short period because of congestion?* O S N
2. *Do you feel that accidents are due to bad luck?* O S N
3. *Do you believe in taking chances in attempting to pass other cars?* O S N
4. *Do you daydream when driving?* O S N
5. *Do you get annoyed when other drivers make minor mistakes?* O S N
6. *When approaching a yellow traffic light, do you speed up to beat the red light?* O S N
7. *When there is a line of other cars waiting at a red light, do you like to slip in ahead of the line?* O S N
8. *When you see a no-passing zone or double center-lines ahead, do you go ahead and pass another car?* O S N
9. *When you are in a line of cars moving at the speed limit of 50 MPH, do you drive 40?* O S N
10. *Do you get upset when someone criticizes your driving?* O S N
11. *When the speed limit is 50 MPH, do you drive at 60 or 65?* O S N
12. *Do you double-park, even though it is strictly forbidden by local regulations?* O S N
13. *When another car attempts to pass you, do you speed up to keep him from passing?* O S N
14. *Do you ignore stop signs when you see that there are no cars approaching?* O S N
15. *Do you "jump" traffic lights - start before the light has turned green?* O S N

Your Score _____

PROFILE TEST 2:

GOOD DRIVING PRACTICES

Your daily driving practices determine the kind of driver you are. The following situations, many of which require split-second decisions, are frequently encountered by drivers. Indicate your answer to each question by underlining YES or NO. Correct answers are listed on Page 65.

1. *You are driving behind a bicyclist on a dry pavement. Suddenly he swerves directly in front of you. Should you apply your brakes hard?* Yes No

2. *When you wish to make a left turn, should you approach and start the turn from the right side of the roadway?* Yes No

3. *When approaching an intersection, should you yield the right of way to a car that has already entered the intersection from a cross street?* Yes No

4. *As you are driving down a steep hill on a wet pavement, a car suddenly backs out of a driveway into your lane. Should you apply your brakes hard?* Yes No

5. *Ordinarily, is it a safe practice to pass on the right?* Yes No

6. *Should you be prepared to yield the right of way to other drivers, even though they have made driving errors and are in the wrong?* Yes No

7. *Driving at 50 MPH, you approach an important intersection where there are no traffic lights or stop signs. Should you slow down?* Yes No

8. *In preparing to make a right turn on a four-lane road, is it a good practice to approach and start the turn from the right-hand lane?* Yes No

9. *When stuck in deep mud, snow, or sand, is it a good practice to rock your car back and forth to get out?* Yes No

10. *Should pedestrians be given the right of way when they are crossing against the lights?* Yes No

Score: number right x 10 *Your Score* _____

PROFILE TEST 3: (THIS TEST IS FOR EXPERIENCED DRIVERS)

YOUR DRIVING HABITS

The kind of driver you are depends a great deal on the things you actually do, day in and day out. Here are more of the common situations the driver meets almost every day. Rate yourself by indicating in the parentheses how many times out of ten *you follow this practice in your driving. To evaluate your score, see page 65.*

1. *How many times out of 10 do you use your low or passing beam when meeting other cars at night on two- or three-lane roads?* ( )

2. *When driving at 50 MPH on a two-lane road, how many times out of 10 do you slow down when you see a bicyclist ahead on your side of the road?* ( )

3. *How many times out of 10 do you use hand or electrical signals before making turns at intersections to warn other drivers?* ( )

4. *How many times out of 10 do you drive more carefully in rainy or other bad weather conditions than in clear weather?* ( )

5. *How many times out of 10 do you slow down before crossing railroad tracks?* ( )

6. *How many times out of 10 do you signal your intention before pulling out of a parking space into a lane of traffic?* ( )

7. *How many times out of 10 do you stop when you come to an intersection where there is a flashing red traffic light?* ( )

8. *When traveling at 50 MPH on a two-lane road, how many times out of 10 do you slow down for an important intersection where there are no traffic lights or stop signs?* ( )

9. *How many times out of 10 do you come to a stop on a two- or three-lane road when you approach a school bus taking on or discharging passengers?* ( )

10. *When you are driving at 50 MPH on a two-lane road and notice pedestrians ahead on the road, how many times out of 10 do you slow down?* ( )

To get your score, add numbers in parentheses.

Your Score _____

PROFILE TEST 4:

WHAT DO YOU KNOW ABOUT THE MECHANICS OF THE CAR?

To be a good driver, you need not be an expert in mechanics. However, you should have a basic understanding of how your car works so that you can take proper care of it. You should also know enough about mechanics to recognize when something goes wrong and to have it repaired properly. To test your knowledge, indicate the missing word or words in the space provided. Check your answers on page 65.

1. *To keep the high temperature of the explosions in the cylinders from melting or otherwise injuring the motor, the walls of the cylinders are surrounded by* _____.

2. *To prevent an overloaded electrical circuit, a* _____ *is installed in the line.*

3. *It is generally recommended that the chassis be lubricated at least once every* _____ *days.*

4. *If there is plenty of water in the radiator, and yet the motor overheats, one of the first things to check is the* _____.

5. *If the motor in a late-model car knocks when using regular motor fuel, the knock will usually disappear when using* _____ *gasoline.*

6. *The part of the engine where gasoline is mixed with air before entering the cylinders is called the* _____.

7. *If your storage battery is in good shape and fully charged, yet your lights and radio go off suddenly, the first thing to check is the* _____.

8. *The mechanical failure that most often leads to accidents is faulty* _____.

9. *The part of the engine which ignites the gas mixture in the cylinder is called the* _____.

10. *The part of the car that produces electricity to charge the battery is the* _____.

Score: number right x 10

Your Score _____

PROFILE TEST 5:

WHAT DO YOU KNOW ABOUT DRIVING THE EXPRESSWAYS?

After the congestion of city traffic, the turnpike or thruway is a welcome change. Don't be lulled, however, by those long, straight stretches of highway. The combination of great ease and great speed is potentially as explosive as gasoline and a lighted match. To test your knowledge of turnpike driving, draw a circle around T or F to indicate whether each statement is True or False. For the correct answers, see page 65.

1. *The total stopping distance at 60 MPH is about the length of a football field.* T F

2. *The largest percentage of fatalities on turnpikes is due to running off the roadway.* T F

3. *Gasoline consumption is greater at 60 MPH than 40 MPH.* T F

4. *The accident rate is higher on modern turnpikes and thruways than on older roads.* T F

5. *When preparing to leave the turnpike, one should get into the proper lane and slow down.* T F

6. *The monotony of turnpike driving can be avoided by glancing occasionally at the sides of the road, at the instrument board, or into the rear-view mirror.* T F

7. *You are driving 60 MPH on a wet thruway and a sudden stop is required. It is best to hit the brakes* hard. T F

8. *When following another car at 60 MPH, it is safe to keep 3 car lengths behind.* T F

9. *It is not necessary to pull off the traffic lanes of the thruway for a stop of only a few minutes.* T F

10. *Where the median strip between the lanes is 5 feet wide, it is not necessary to dim your lights when meeting other cars at night.* T F

Score: number right x 10

Your Score _____

PROFILE TEST 6:

WHAT DO YOU KNOW ABOUT SAFE DRIVING?

Are you making progress as a driver? Well, before you apply for a TV quiz show (category: Safe Driving), here is a quiz on some important points. Supply the letter you think is right in the parentheses; check your answers on page 65.

( ) 1. *If the braking distance for a car traveling at 20 MPH is approximately 20 feet, what would the braking distance be for a car traveling at 40 MPH?*
(a) 40 feet (b) 125 feet (c) 80 feet

( ) 2. *Most automobile skids are due to:*
(a) over-inflated tires (b) slippery surfaces
(c) speed too fast for road conditions

( ) 3. *When one has to make an emergency stop, the total distance required will be:*
(a) the reaction distance (b) the reaction distance plus the braking distance (c) the braking distance

( ) 4. *If the driver of an approaching car fails to dim his headlights after you have dimmed yours, you should:*
(a) put your headlights back on high beam (b) watch the approaching car (c) focus your eyes on the right side of the road

( ) 5. *Most traffic accidents are the result of:*
(a) mechanical defects (b) weather conditions (c) driver errors

( ) 6. *When approaching a diamond-shaped road sign, the driver should:*
(a) stop (b) yield the right-of-way (c) reduce speed and drive with caution

( ) 7. *To maneuver a car out of a skid, the driver should first:*
(a) apply brakes hard (b) steer straight ahead (c) steer in the direction of the skid

( ) 8. *Double, unbroken white lines on a two-lane highway mean:*
(a) passing is permitted, if done with caution (b) passing is not permitted (c) neither of these

( ) 9. *If a blowout occurs in the right front tire at a speed of 50 MPH, the driver should* **first:**
(a) apply the brakes hard (b) steer sharply to the left (c) steer straight ahead

( ) 10. *If you are involved in a personal injury accident, the* **first** *thing you should do is:*
(a) call the police (b) assist the injured (c) inspect car for damage

Score: number right x 10 Your Score _____

PROFILE TEST 7:

WHAT DO YOU KNOW ABOUT TRAFFIC SAFETY?

Like taxes, traffic safety is a subject on which almost everyone has strong opinions. Opinions should be based on knowledge. How accurate is your knowledge? You can find out by taking this test. Indicate your answer by underlining YES or NO for each question. You will find the answers on page 65.

Underline Yes or No

1. *During the last ten years, has the trend in the death rate from automobile accidents, on a basis of the number of million miles traveled, been upward?* Yes No

2. *Has road construction since World War II kept pace with the growth in the use of the automobile?* Yes No

3. *Is the accident rate for operators of trucks and buses lower than that for passenger-car drivers?* Yes No

4. *Are drivers who have amassed traffic violations also individuals who are more likely to be involved in traffic accidents?* Yes No

5. *Is the accident rate for younger drivers (15-24 years of age) lower than the average for all ages?* Yes No

6. *Is there greater uniformity of traffic laws and regulations among the states than there were five years ago?* Yes No

7. *Can a strong enforcement program eliminate all accidents?* Yes No

8. *Are people generally more courteous when driving than when not driving?* Yes No

9. *Do emergency vehicles on calls have the right of way over other vehicles?* Yes No

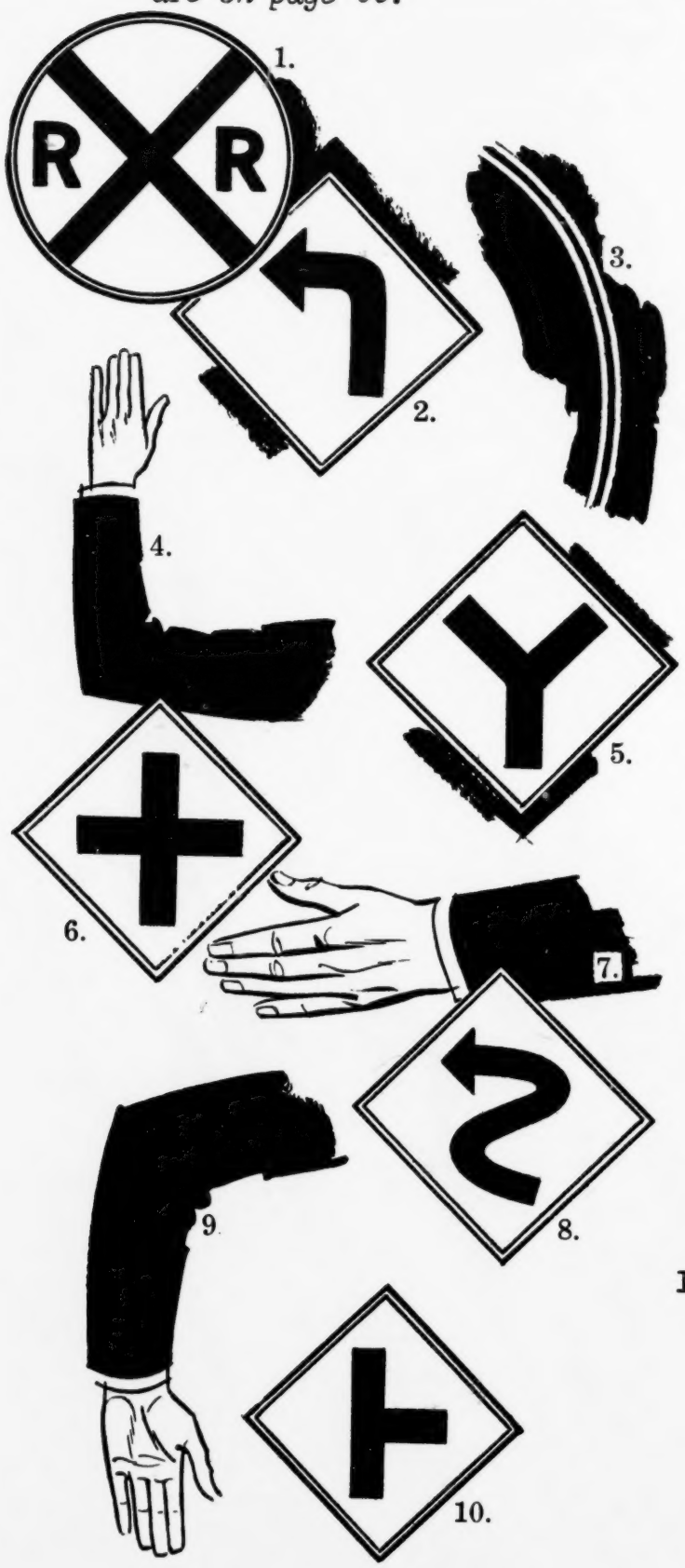
10. *Are good driving skills more important than good driving attitudes?* Yes No

Score: number right x 10

Your Score _____

PROFILE TEST 8: *READING THE ROAD*

Road signs, road markings, and hand signals give important information to the driver. Without them, he would be "driving blind." In each of the following cases, there's a familiar message or signal to the driver. How many can you read? Check the letter which indicates the correct choice. *Answers are on page 65.*



1. ( ) a. *School crossing*
   ( ) b. *Railroad crossing*
   ( ) c. *Slippery when wet*

2. ( ) a. *Passing permitted*
   ( ) b. *Keep to left*
   ( ) c. *Road curves to left*

3. ( ) a. *Do not pass*
   ( ) b. *Pass when northbound only*
   ( ) c. *Pass in either direction*

4. ( ) a. *I am stopping*
   ( ) b. *You may pass me*
   ( ) c. *I am turning right*

5. ( ) a. *Dual road ahead*
   ( ) b. *Road forks ahead*
   ( ) c. *Traffic signal ahead*

6. ( ) a. *Intersection ahead*
   ( ) b. *Church crossing*
   ( ) c. *Do not pass*

7. ( ) a. *Pass me on the left*
   ( ) b. *Slow down*
   ( ) c. *I am turning left*

8. ( ) a. *School crossing*
   ( ) b. *Winding road*
   ( ) c. *Slippery when wet*

9. ( ) a. *I am stopping*
   ( ) b. *You may pass me*
   ( ) c. *I am turning left*

10. ( ) a. *Keep to right*
    ( ) b. *Intersecting road on right*
    ( ) c. *Pass on right*

Score: number right x 10

Your Score _____

ANSWERS TO TESTS

Here are the answers to all the tests in this booklet. In general, answers are acceptable if they have the same meaning but do not use exact words given.

PROFILE TEST 1: YOUR PERSONAL CHARACTERISTICS *To convert your rating to a score, multiply the N's by 7; S's by 4; O's by zero; and total. Research has shown that drivers who are easily upset or emotionally unstable do not have good driving records. Those who are courteous, attentive and alert, sportsmanlike, not easily frustrated, and not overly aggressive tend to have better driving experience. The same is true for those who are in good health and well adjusted in their family and social relationships. Driving is one way in which we express our personalities. We tend to drive as we live.*

PROFILE TEST 2: GOOD DRIVING PRACTICES *1 - (Y) this is the best practice on dry pavement; 2 - (N) you should start the turn from the center lane; 3 - (Y) the car that has already entered the intersection has the right-of-way; 4 - (N) pump brakes. Slamming them on may throw you into a skid; 5 - (N) it is usually a safer practice to pass on the left; 6 - (Y); 7 - (Y) by all means, slow down; 8 - (Y); 9 - (Y); 10 - (Y).*

PROFILE TEST 3: YOUR DRIVING HABITS *In each question, the nearer your score is to 10, the better your rating.*

PROFILE TEST 4: WHAT DO YOU KNOW ABOUT THE MECHANICS OF THE CAR? *1 - water or water jacket; 2 - fuse, or circuit breaker; 3 - 60 days or less; 4 - fan belt or thermostat; 5 - premium or higher octane gas; 6 - carburetor; 7 - fuses or battery connections; 8 - brakes; 9 - spark plug; 10 - generator or alternator.*

PROFILE TEST 5: WHAT DO YOU KNOW ABOUT DRIVING THE EXPRESSWAYS? *(T) the stopping distance at 60 MPH, including reaction and braking distances, is about 300 feet, the length of a football field; 2 - (F) about 50% of all fatalities involve rear-end collisions; 3 - (T); 4 - (F) studies indicate that the rate on turnpikes is lower than on older roads; 5 - (T); 6 - (T) don't "glue" your eyes on the road; 7 - (F) intermittent application or "pumping" the brakes is safer; 8 - (F) a good rule is one car length for each 10 MPH speed. At 60 MPH, you should be 6 car lengths behind; 9 - (F) always pull off the road; 10 - (F).*

PROFILE TEST 6: WHAT DO YOU KNOW ABOUT SAFE DRIVING? *1 - (c) while the speed at 40 MPH is twice that at 20, the braking distance would be 4 times 20, or 80 feet; 2 - (c); 3 - (b) the reaction distance plus the braking distance; 4 - (c); 5 - (c) driver errors contribute to a large percent; 6 - (c) a diamond-shaped road sign always indicates caution - slow down; 7 - (c) steer in the direction the car is skidding; 8 - (b); 9 - (c) the first step is to keep the car on the road; 10 - (b) the injured come first.*

PROFILE TEST 7: WHAT DO YOU KNOW ABOUT TRAFFIC SAFETY? *1 (N) there has been a marked reduction in the death rate; 2 - (N) road construction has not kept pace; 3 - (Y) studies tend to show this; 4 - (Y) research indicates that this is true; 5 - (N) it is higher; 6 - (Y); 7 - (N) education and engineering are essential, also, to traffic safety; 8 - (N); 9 - (Y); 10 - (N) attitudes are more important.*

PROFILE TEST 8: READING THE ROAD *1 - (b); 2 - (c); 3 - (a); 4 - (c); 5 - (b); 6 - (a); 7 - (c); 8 - (b); 9 - (a) 10 - (b).*

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